

PREFACE

This publication is an installation guide for the MS-DOS operating system. It describes the installation of Microsoft MS-DOS Version 3.20 on an Olivetti Personal Computer.

SUMMARY

The first chapter of this guide presents the contents of the MS-DOS Software Kit; this includes a section where GW-BASIC introduces itself as a programming language that anybody can use. The other chapters tell the user how to install the MS-DOS operating system onto his computer. Chapter 3 covers installation of National keyboard drivers and fonts. Chapter 4 covers installing MS-DOS on floppy disk based systems. Chapter 5 covers installing MS-DOS on hard disk based systems. Chapter 6 tells the user how to configure his operating system for optimal running. Finally there is an appendix, which contains diagrams of all the keyboards which can be connected to the various Olivetti Personal Computers.

PRE-REQUISITE PUBLICATIONS:

Installation and Operations Guide for your Personal Computer.

RELATED PUBLICATIONS:

MS-DOS User Guide (Code 4034460 Z)
MS-DOS Quick Reference Guide (Code 4034470 S)
A Simple To Using MS-DOS (Code 4033480 N)
MS GW-BASIC Interpreter under MS-DOS User Guide
(Code 4034490 C)
MS GW-BASIC under MS-DOS Quick Reference Guide
(Code 4034510 W)

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CONTENTS

1. PRESENTING MS-DOS AND GW-BASIC

PRESENTING MS-DOS THE OPERATING SYSTEM WITH THE MOST APPLICATIONS	1-1
THE MS-DOS SOFTWARE KIT	1-1
WHAT SHOULD YOU READ	1-2
CONTENTS OF THE MASTER DISKETTE(S)	1-2
PRESENTING GW-BASIC A LANGUAGE FOR ALL TYPES OF USERS	1-10

2. HOW TO INSTALL YOUR SOFTWARE

INTRODUCTION	2-1
YOU ONLY NEED TO READ ABOUT YOUR HARDWARE CONFIGURATION	2-1
BEFORE YOU BEGIN	2-2
DISK TYPES	2-2
WRITE PROTECT YOUR MASTER DISKETTES	2-5
TURNING YOUR COMPUTER ON	2-6
BOOTSTRAPPING YOUR COMPUTER	2-6
HOW TO TERMINATE YOUR WORKING SESSION	2-7
THE DEFAULT DRIVE	2-8
DRIVE LETTERS FOR SINGLE DRIVE SYSTEMS	2-9
PREPARING WORKING COPIES OF YOUR SYSTEM DISKETTES	2-9
HOW TO FORMAT YOUR DISKETTES	2-11
HOW TO LIST THE FILES ON A DISK	2-13

AUTOMATIC PROGRAM EXECUTION	2-15
SETTING UP YOUR DISK FOR NATIONAL SUPPORT	2-15
KEYBOARD AND SCREEN SUPPORT	2-15
MS-DOS COUNTRY SPECIFIC OPERATIONS SUPPORT	2-17
DISPLAYING THE CHARACTER SET	2-17
THE SELECT COMMAND	2-19
THE HARD DISK	2-19
THE FDISK COMMAND	2-19
THE FORMAT COMMAND	2-19
THE COPY COMMAND	2-20
THE SELECT COMMAND FOR A HARD DISK	2-20

3. KEYBOARDS AND FONTS

INTRODUCTION	3-1
KEYBOARD DRIVERS	3-1
FONTS	3-3
SETTING UP YOUR SYSTEM DISK	3-3
THE SELECT COMMAND	3-3
NATIONAL KEYBOARDS	3-5
KEYBOARD LAYOUTS	3-5
MULTI-CHARACTER KEYS	3-9
SWISS-GERMAN/SWISS-FRENCH KEYBOARD	3-10
GREEK KEYBOARD	3-11



Operating Systems and Languages Library

GETTING STARTED with MS-DOS

Software Installation Guide



olivetti



WARNINGS

If you have a hard disk...

After you have installed MS-DOS Version 3.20 on your hard disk, do **not** use old or non-Olivetti versions of MS-DOS (PC-DOS) and access your hard disk. Doing so may corrupt your hard disk.

CONFIGURING MS-DOS WITH DRIVPARM AND DRIVER.SYS

Only use DRIVPARM and DRIVER.SYS with parameters appropriate to the hardware device(s) connected to your computer. See this manual or the installation manual for details of the device and the correct parameter settings. It is recommended that end-users ask their dealers or qualified personnel for assistance in using DRIVER.SYS or DRIVPARM.

If you have 3 1/2 inch floppy disk drives...

You will require DRIVPARM command(s) in your CONFIG.SYS. Be careful to use the DRIVPARM parameters **exactly** as specified in the Section "Floppy Disk CONFIG.SYS" in Chapter 6 ("Configuring and Initializing MS-DOS"). Pay particular attention to the DRIVPARM examples.

OLIMENU

OLIMENU is a member of the OLISOFT family of application programs. It is used to create a series of interconnected menus. By selecting an item on a menu it is possible to call an application program, or an internal or external MS-DOS command.

The OLIMENU program and accompanying documentation is to be found in a directory called OLIMENU. If you have a 3 1/2 inch MS-DOS System diskette, the OLIMENU directory will be on this diskette. If you have 5 1/4 inch MS-DOS diskettes, the OLIMENU directory will be on the Supplementary diskette.

To find out about this program and the OLISOFT family, bootstrap the computer with the MS-DOS System disk, make sure that the diskette containing OLIMENU is in the "A:" drive, then change directory to the OLIMENU directory. At the "A>" prompt, type:

OLM

then press ENTER

The menu that is displayed has the following two items:

OLISOFT family

choosing this option displays general information about OLIMENU and the OLISOFT family.

READ ME

choosing this option displays the OLIMENU manual. (The file containing the OLIMENU manual is called OLM.DOC, this is an ASCII text file which can be printed.)

To select either of these items: move the cursor to the required item and press ENTER; or type in the first character of the required item.

PORTUGAL KEYBOARD	3-11
DEAD SYMBOLS	3-12
KEYS WITH INVISIBLE CHARACTERS	3-13

4. FLOPPY DISK SYSTEMS

INTRODUCTION	4-1
TO UPGRADE AN EXISTING SYSTEM DISKETTE TO VER. 3.20	4-1
USING THE SYS COMMAND TO INSTALL MS-DOS VER. 3.20 HIDDEN FILES	4-1
USING THE REPLACE COMMAND TO UPDATE AN EX- ISTING FLOPPY DISK	4-2
TO INSTALL MS-DOS VER. 3.20 ON A NEW SYSTEM DISKETTE	4-3
USING THE FORMAT COMMAND TO INITIALIZE A SYSTEM DISKETTE	4-3
COPYING SYSTEM FILES AND EXTERNAL COMMANDS	4-4
USING THE SELECT COMMAND TO INSTALL A SYSTEM DISKETTE	4-5

5. HARD DISK SYSTEMS

INTRODUCTION	5-1
TO UPGRADE A HARD DISK TO MS-DOS VER. 3.20	5-1
USING THE SYS COMMAND TO INSTALL THE HIDDEN SYSTEM FILES	5-1
USING THE REPLACE COMMAND TO UPDATE EXISTING FILES	5-2

HOW TO BACKUP YOUR HARD DISK	5-3
HOW TO RESTORE YOUR HARD DISK	5-4
HOW TO SET UP YOUR HARD DISK FROM SCRATCH	5-5
HOW TO USE FDISK TO PARTITION YOUR FIXED DISK	5-5
HOW TO USE THE ENTIRE FIXED DISK AS AN MS-DOS PARTITION	5-7
CREATING THE MS-DOS PARTITION WHEN THERE ARE NON DOS PARTITIONS	5-9
HOW TO CREATE THE MS-DOS PARTITION	5-10
HOW TO CHANGE THE ACTIVE PARTITION	5-14
HOW TO DELETE THE MS-DOS PARTITION	5-16
HOW TO DISPLAY THE FIXED DISK PARTITION MAP	5-17
FDISK: SETTING UP MULTIPLE PARTITIONS	5-18
INTRODUCTION	5-18
HOW TO PREPARE THE FIXED DISK	5-19
HOW TO PARTITION YOUR FIXED DISK	5-20
PARTITIONING WITH NO MS-DOS PARTITIONS DEFINED	5-21
PARTITIONING WITH PARTITIONS ALREADY DEFINED	5-23
HOW TO CHANGE THE ACTIVE PARTITION	5-29
FDISK FOR TWO FIXED DISK DRIVES	5-32
INTRODUCTION	5-32
DRIVE LETTER ASSIGNMENTS	5-35
MAKING YOUR FIXED DISK BOOTABLE	5-36

FORMATTING YOUR HARD DISK	5-38
FORMATTING THE C: DRIVE	5-39
FORMATTING HARD DISK DRIVES OTHER THAN C:	5-40
TRANSFERRING THE OPERATING SYSTEM TO HARD DISK	5-41
USING SELECT TO INSTALL MS-DOS ON YOUR HARD DISK	5-41
BOOTSTRAPPING YOUR COMPUTER	5-43

6. CONFIGURING AND INITIALIZING MS-DOS

INTRODUCTION	6-1
THE CONFIGURATION OF MS-DOS USING CONFIG.SYS	6-1
FLOPPY DISK CONFIG.SYS	6-1
HARD DISK CONFIG.SYS	6-2
THE INITIALIZATION OF MS-DOS USING AN AUTOEXEC.BAT FILE	6-3
USING THE AUTOEXEC.BAT TO LOAD APPLICATIONS	6-4

A. KEYBOARD LAYOUTS

INDEX

1. PRESENTING MS-DOS AND GW-BASIC

ABOUT THIS CHAPTER

This chapter presents the contents of this Software Kit. It tells you what to read before you install MS-DOS and where to find the various items of software. It briefly introduces you to the software on the enclosed diskette(s).

CONTENTS

**PRESENTING MS-DOS
THE OPERATING
SYSTEM WITH THE
MOST APPLICATIONS** **1-1**

**THE MS-DOS
SOFTWARE KIT** **1-1**

**WHAT SHOULD YOU
READ** **1-2**

**CONTENTS OF THE
MASTER DISKETTE(S)** **1-2**

**PRESENTING GW-
BASIC A LANGUAGE
FOR ALL TYPES OF
USERS** **1-10**

PRESENTING MS-DOS THE OPERATING SYSTEM WITH THE MOST APPLICATIONS

Congratulations on buying the operating system that runs more applications on your Personal Computer than any other competing operating system. This version of MS-DOS supports networking, multiple MS-DOS partitions on your hard disk, virtual disk in main memory, 5 1/4 inch and 3 1/2 inch floppy disk drives, and many other external storage devices. Read this manual and the "MS-DOS User Guide" for more details.

Remember, your Olivetti dealer is always available to provide assistance and training.

THE MS-DOS SOFTWARE KIT

This Software Kit contains the following items:

- GETTING STARTED WITH MS-DOS: Software Installation Guide
- A Simple Guide To Using MS-DOS
- MS-DOS User Guide
- MS-DOS Quick Reference Guide
- MS GW-BASIC Interpreter under MS-DOS User Guide
- MS GW-BASIC under MS-DOS Quick Reference Guide
- Software Diskette(s), one 3 1/2 inch diskette or two 5 1/4 inch diskettes.

YOUR PERSONAL COMPUTER STARTER KIT

The Starter Kit contains the following items:

- An Installation and Operations Guide
- Software Diskettes, including the Keyboard Drivers software.

WHAT SHOULD YOU READ

Before running MS-DOS read:

- Your computer's Installation and Operations Guide
- The Simple Guide To Using MS-DOS, if you lack the basic concepts of MS-DOS
- This Software Installation Guide, if your software has not been set up ready for you.

As you read the above books refer to:

- The MS-DOS User Guide, for more in depth explanations and details.

As you are installing and running MS-DOS refer to:

- The MS-DOS Quick Reference Guide
- The reference sections of the MS-DOS User Guide.

CONTENTS OF THE MASTER DISKETTE(S)

There are two 5 1/4 inch diskettes: a System Disk and a Supplementary Disk.

or

There is one 3 1/2 inch diskette: a System Disk with all the contents of the 5 1/4 inch System and Supplementary Disks on one diskette.

The following table shows the contents of the 5 1/4 inch System Disk and a partial contents of the 3 1/2 inch System Disk:

PRESENTING MS-DOS AND GW-BASIC

FILE NAME	DESCRIPTION
ANSI.SYS	The American National Standards Institution Standard screen-handling and keyboard extension device driver. See Appendix C of the "MS-DOS User Guide" for more details. If used, it must be in the root directory of the booting disk.
ASSIGN.COM	An external command to re-assign the logical drive assigned to a particular physical disk drive. Normally used when application software refers to the "A:" or "B:" drives, but the software is installed on a hard disk, for example the "C:" drive. Not normally used with diskette drive only configurations.
ATTRIB.EXE	An external command to set or reset attributes of a file.
CHKDSK.COM	A very useful external command for checking and correcting errors on both floppy diskettes and on hard disks.

FILE NAME	DESCRIPTION
COMMAND.COM	<p>When the operating system is booted, this external command must either be in the root directory or in the directory given as the <i>pathname</i> parameter in the SHELL declaration (see Appendix C "Configuring MS-DOS" in the "MS-DOS User Guide" for more details). COMMAND.COM is an external command used either for reloading the command processor if it gets overwritten, or for calling a secondary command processor. Reloading is automatic if COMMAND.COM is available to the operating system on a loaded disk. If you have sufficient room; copy COMMAND.COM to Virtual Disk and change the value of COMSPEC in the environment to give the pathname on the Virtual Disk. See "COMMAND" in Chapter 5 of the "MS-DOS User Guide" for more details.</p>
COMP.COM	<p>An external command for comparing files.</p>
CONFIG.SYS	<p>This file is present on the 3 1/2 inch diskette. If it is present, then your operating system may have been pre-configured for you. Type CONFIG.SYS and read Chapter 6 "Configuring and Initializing MS-DOS" to see if it correct for your requirements. This file, if present must be in the root directory of the booting disk.</p>
DISKCOMP.COM	<p>An external command for comparing diskettes with the same specifications. It cannot be used for comparing Hard Disks.</p>
DISKCOPY.COM	<p>An external command for copying a diskette to another with the same specification. It cannot be used for copying Hard Disks.</p>

PRESENTING MS-DOS AND GW-BASIC

FILE NAME	DESCRIPTION
DRIVER.SYS	A generic block device driver. This driver must be used with care. It is recommended that end-users ask their dealers or qualified personnel for assistance in using this driver for configuring block devices. If used it must be placed in the root directory of the booting drive. See Appendix G of the "MS-DOS User Guide" titled "Installing New Block Devices" for more details.
EDIT.EXE	An external command which calls the "Visual Display Editor". See Chapter 6 of the "MS-DOS User Guide" for more details.
FIND.EXE	An external command which acts as a filter for finding lines of information in text files.
FORMAT.COM	An external command which formats a disk or diskette to receive MS-DOS files.
GRAFTABL.COM	If you wish to use the extended ASCII characters, this external command should be placed in your AUTOEXEC.BAT. See Chapter 6 "Configuring and Initializing MS-DOS" for more details. Note that this routine becomes resident, the Random Access Memory space occupied can only be reclaimed by rebooting the computer.
GRAPHICS.COM	If you wish to print screens, which contain graphics characters, this external command should be placed in your AUTOEXEC.BAT. See Chapter 5 of the "MS-DOS User Guide" for more details.

FILE NAME	DESCRIPTION
GWBasic.EXE	This external command calls the MS GW-BASIC Interpreter. See the "MS GW-BASIC User Guide" for more details.
JOIN.EXE	This external command joins a disk drive to an empty directory on another drive to produce a single directory structure.
LABEL.COM	This external command enables you to modify or delete a valid disk label.
MODE.EXE	This external command is used for: setting RS-232-C protocols; setting and testing the video monitor modes; setting and redirecting printer modes.
MORE.COM	This external command is a filter to enable you to see one page of text output at a time on the Video Monitor.
PRINT.COM	This external command queues files for background printing, while other commands are obeyed.
RECOVER.COM	This external command recovers an entire disk or a file. Be aware that recovering a whole disk destroys the disk's directory structure: use with care!

PRESENTING MS-DOS AND GW-BASIC

FILE NAME	DESCRIPTION
REPLACE.EXE	New to this release, this external command enables files to be replaced or added to the target disk. It is particularly useful for upgrading old versions of operating systems and other software.
SELECT.COM	This external command installs MS-DOS on diskettes or hard disk. The target disk is formatted so it must not contain any files that are wanted.
SHARE.EXE	This external command is for use in a networking environment. It becomes resident in main Random Access Memory, as such it can be removed only by bootstrapping the Computer.
SORT.EXE	This external command acts as a filter to sort text files into alpha-numeric order.
SUBST.EXE	This external command substitutes a dummy drive specifier for a directory path.
SYS.COM	This external command is used for upgrading an old version of the MS-DOS hidden system files to this new version. When this command is obeyed, the default drive must be the original drive from which the computer was bootstrapped.
TREE.COM	This external command shows the hierarchical directory structure of the specified drive.

FILE NAME	DESCRIPTION
VDISK.SYS	This device driver if declared in the CONFIG.SYS file installs a virtual disk. If used it must be in the root directory of the system disk. See Appendix F "The Virtual Disk System" in the "MS-DOS User Guide" for more details.
XCOPY.EXE	This external command enables whole disks or subdirectory branches to be copied. As such it provides a replacement for DISKCOPY for dissimilar source and target disks.

The following table shows the contents of the Supplemental Diskette on 5 1/4 inch diskette, but for 3 1/2 inch diskette all the following files are contained on the System Diskette:

FILE NAME	DESCRIPTION
BACKUP.COM	This external command is for backing up files from hard disk to diskette in a special backup format, "RESTORE" is required to restore them. It is possible to use this command to backup from floppy disk to floppy disk, but this only likely to be used in special circumstances.
DEBUG.COM	This external command calls the program debugger. As well as for debugging programs it can be used for "patching" files; however if you do this only patch a copy not the original file. See Chapter 9 "The Debugger" in the "MS-DOS User Guide".

PRESENTING MS-DOS AND GW-BASIC

FILE NAME	DESCRIPTION
EDLIN.COM	This external command calls the line editor. See Chapter 7 "Line Editor (EDLIN)" in the "MS-DOS User Guide".
EXE2BIN.EXE	This external command should only be used by programmers. See Chapter 5 "Commands" in the "MS-DOS User Guide".
FC.EXE	This external command is "File Compare" a highly sophisticated command for comparing either text or binary files. See Chapter 5 "Commands" in the "MS-DOS User Guide".
FDISK.COM	This external command is the Fixed Disk Partition Installation Program. It is completely composed of menus giving you options from which you have to choose. See Chapter 5 "Hard Disk Systems" for details.
HEXDUMP.COM	This external command is for programmers to dump files in hexadecimal.
LINK.EXE	This external command is for programmers to convert object files to executable files.
NORDIC.COM	This external command is the equivalent of "GRAFTABL" for Scandinavian Countries. See "GRAFTABL" in the previous table.

FILE NAME	DESCRIPTION
PORTUGAL.COM	This external command is the equivalent of "GRAFTABL" for Portugal. See "GRAFTABL" in the previous table.
RESTORE.COM	This external command is for restoring files from diskette to hard disk, which were backed-up using "BACKUP".

PRESENTING GW-BASIC A LANGUAGE FOR ALL TYPES OF USERS

QUESTION 1 : DO YOU KNOW HOW TO PROGRAM?

If YES Go To Question 2

If NO Read The Following Paragraph

Have you always wanted to have a go at programming? Yes? Well here is your chance. GW-BASIC is so simple to use that even the least technically-minded person can be programming in minutes. Take a look at the following program:

```

10 INPUT "DO YOU KNOW HOW TO PROGRAM" ; ANSWER$
20 IF ANSWER$ = "yes" THEN GO TO 70
30 IF ANSWER$ = "no" THEN GO TO 50
40 INPUT "TYPE yes OR no" , ANSWER$ : GO TO 20
50 PRINT "GW-BASIC IS THE LANGUAGE FOR LEARNING"
60 END
70 PRINT "GW-BASIC HAS EVERYTHING YOU NEED"
```


PRESENTING MS-DOS AND GW-BASIC

If you can follow even some of the reasoning you have got the makings of a GW-BASIC programmer! The "MS GW-BASIC Interpreter User Guide" describes each type of instruction you can use in your programs and provides examples to make it really easy. **Now go to Question 5.**

QUESTION 2 : ARE YOU WORRIED THAT GW-BASIC IS TOO SIMPLE FOR THE IDEAS YOU HAVE IN MIND?

If NO Go To Question 4

If YES Read The Following Paragraph

Don't be! GW-BASIC has everything you need. GW-BASIC comprises all the standard features and also contains many features not often offered by BASICs. You can perform graphics, disk file handling, asynchronous communications, use assembly language routines and much, much more. **Continue at Question 3.**

QUESTION 3 : DO YOU HAVE PROBLEMS WITH CREATING, EDITING AND DEBUGGING PROGRAMS?

If NO Go To Question 4

If YES Read The Following Paragraph

Those days are over: GW-BASIC has a powerful screen editor, providing you with easy program creation and execution, instant error detection and simple program modification. **Continue at Question 4.**

QUESTION 4 : ARE YOU INTERESTED IN ANY OF THE FOLLOWING:

GRAPHICS, DISK FILE HANDLING, COMMUNICATIONS, MAKING USE OF ASSEMBLY LANGUAGE ROUTINES?

If NO Go To Question 5

If YES Read The Following Paragraph

Good! The MS GW-BASIC Interpreter User Guide has chapters dedicated to each of these subjects with examples to make the descriptions even easier to follow. **Continue at Question 5.**

QUESTION 5 :

CAN YOU IMAGINE A SITUATION WHERE YOU WANT TO JUST SEE WHAT IS AVAILABLE TO YOU OR TO CHECK UP ON A PARTICULAR INSTRUCTION?

If NO Go To END

If YES Read The Following

You can make use of the "MS GW-BASIC Quick Reference Guide". It contains a summary of all the instructions available, and brief reviews of the Graphics Macro Language, the Screen Editor Keys, and syntax conventions.

END : HAPPY PROGRAMMING!

2. HOW TO INSTALL YOUR SOFTWARE

ABOUT THIS CHAPTER

This chapter introduces you to MS-DOS software installation. It describes diskette types and compatibility. It tells you how to start and finish your working session with the computer. It tells you how to set up your working system diskette or hard disk to support your national requirements.

CONTENTS

INTRODUCTION	2-1	PREPARING WORKING COPIES OF YOUR SYSTEM DISKETTES	2-9
YOU ONLY NEED TO READ ABOUT YOUR HARDWARE CONFIGURATION	2-1	HOW TO FORMAT YOUR DISKETTES	2-11
BEFORE YOU BEGIN	2-2	HOW TO LIST THE FILES ON A DISK	2-13
DISK TYPES	2-2	AUTOMATIC PROGRAM EXECUTION	2-15
WRITE PROTECT YOUR MASTER DISKETTES	2-5	SETTING UP YOUR DISK FOR NATIONAL SUPPORT	2-15
TURNING YOUR COMPUTER ON	2-6	KEYBOARD AND SCREEN SUPPORT	2-15
BOOTSTRAPPING YOUR COMPUTER	2-6	MS-DOS COUNTRY SPECIFIC OPERATIONS SUPPORT	2-17
HOW TO TERMINATE YOUR WORKING SESSION	2-7	DISPLAYING THE CHARACTER SET	2-17
THE DEFAULT DRIVE	2-8	THE SELECT COMMAND	2-19
DRIVE LETTERS FOR SINGLE DRIVE SYSTEMS	2-9		

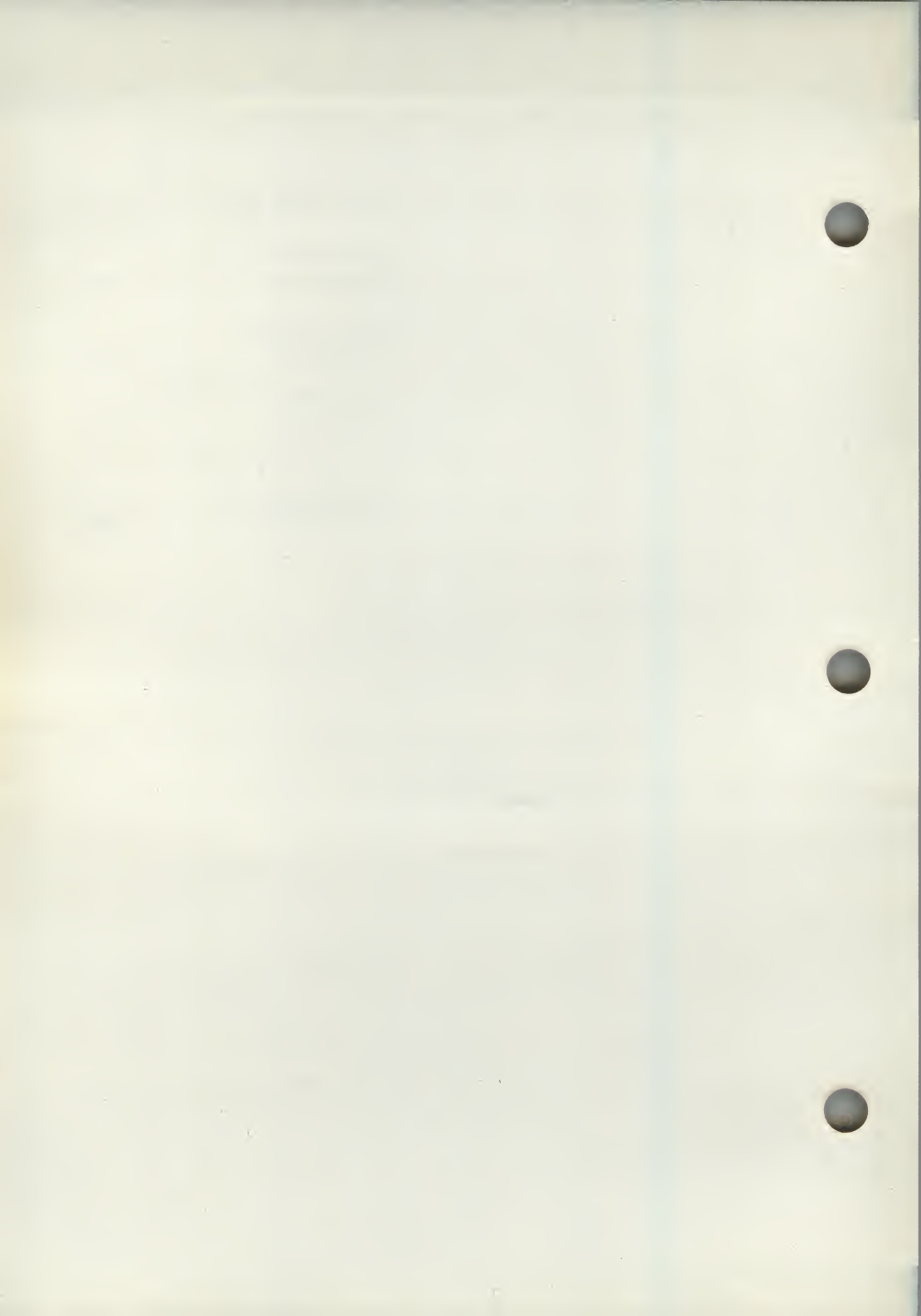
THE HARD DISK 2-19

**THE FDISK
COMMAND 2-19**

**THE FORMAT
COMMAND 2-19**

**THE COPY
COMMAND 2-20**

**THE SELECT
COMMAND FOR A
HARD DISK 2-20**



HOW TO INSTALL YOUR SOFTWARE

INTRODUCTION

This installation guide is divided up into Chapters and Sections; each of which describes different procedures for different hardware configurations.

YOU ONLY NEED TO READ ABOUT YOUR HARDWARE CONFIGURATION

Read this "Chapter", then read the Chapters and Sections relevant to your hardware configuration. The Sections for different hardware configurations are marked as follows:

Floppy Disk Drive Based Systems

Read the Sections commencing:

If you have a Single Floppy Disk Drive...

Also read the Chapter "Floppy Disk Systems"

Dual Floppy Disk System

Read the section commencing:

If you have a Twin Floppy Disk System...

Also read the Chapter "Floppy Disk Systems"

External Diskette Drives

Read the Chapter "Configuring And Initializing MS-DOS".

Hard Disk Drive(s)

Read the Chapter "Hard Disk Systems".

BEFORE YOU BEGIN

DISK TYPES

Information is stored either on 3 1/2 inch or on 5 1/4 inch floppy disks or, if your system has one, on hard disk. This manual will refer to the former as diskettes and the latter as the hard or fixed disk. The term "disk" will be used to mean either diskette or hard disk.

Drive letters (A,B,C through Z) are the means by which commands can identify a particular drive.

The drive letter of the first diskette drive in any system is A. The drive letter of any second diskette drive is B. The drive letter of the first hard disk is C. The drive letters D through Z are used for additional hard disks, disk partitions, virtual disks and dummy drives.

For diskette drives, their capacity governs the type of diskette that can be used in that drive.

Diskettes can have a variety of capacities to hold data; as illustrated in the following table. See your Installation and Operations Guide to check what Diskette capacities your Disk Drive(s) can read and write.

Diskette Capacities

	Double Density 40 track (48 t.p.i.)		High Density 80 track (96 t.p.i. or 135 t.p.i.)		
	8 sector	9 sector	8 sector	9 sector	15 sector
Single Sided	160 KB	180 KB	320 KB	360 KB	-
Double Sided	320 KB	360 KB	640 KB	720 KB	1.2 MB

HOW TO INSTALL YOUR SOFTWARE

3 1/2 Inch Diskette Compatibility

These diskettes are 135 tracks per inch (t.p.i.) and can be formatted single or double sided with 80 tracks. Normally each track will be formatted with nine sectors, giving single sided disks a capacity of 360 KB and double sided disks a capacity of 720 KB. A 3 1/2 inch disk drive with two heads can read and write single sided and double sided diskettes. A 3 1/2 inch disk drive with one head can only read and write single sided diskettes. Obviously you should not place 3 1/2 inch diskettes in a 5 1/4 inch drive, nor can you place 5 1/4 inch diskettes into a 3 1/2 inch drive.

It is possible to format and use a 3 1/2 inch diskette with 40 tracks per side, but it is not recommended as you would be under-utilizing the diskette.

5 1/4 Inch Diskette Compatibility

Standard formatting in Normal-Capacity drives is 40 tracks 9 sectors per track. Formatting in High-Capacity drives is 80 tracks, 15 sectors per track. To format diskettes as 40 tracks, 9 sectors per track in High-Capacity drives use the /4 switch. However note that Normal-Density diskettes written to in High-Capacity drives cannot be reliably read in Normal-Capacity drives. To prevent accidental writing to Normal-Density diskettes in a High-Capacity drive, write protect the diskette.

The following figure shows 5 1/4 inch diskette compatibility in different drives:

		DRIVE		
		Normal Capacity		High Capacity
		Single sided (160/180 KB)	Double sided (320/360 KB)	Double sided (1.2MB)
Diskette Type	5 1/4 in 48 tpi	Read/Write	Read/Write	Read
	5 1/4 in Double sided	—	Read/Write	Read/Write*
	5 1/4 in 96 tpi Double sided	—	—	Read/Write

* Once written the diskette cannot be reliably read in Normal Capacity Double Sided Drives.

Fig. 2-1 Diskette Type Compatibility in Different Capacity Drives

If You Have An External Olivetti Floppy Disk Drive

This external floppy disk drive will be a 3 1/2 diskette drive for computers with 5 1/4 inch internal diskette drive(s); it will be a 5 1/4 inch diskette drive for computers with a 3 1/2 inch internal drives. The 3 1/2 inch external drive is called a Microbox. The 5 1/4 inch external drive is called a Minibox.

This external floppy disk drive can be set to be either drive "A:" or

HOW TO INSTALL YOUR SOFTWARE

drive "B:". This selection is either by a physical switch setting on the rear of the Microbox/Minibox or by software. The physical switch setting is only recognized on physical reset of the computer (either pressing the reset button or turning the machine off and on again). With the menu driven program "DRIVE.EXE" (to be found on the Microbox/Minibox Utility Diskette) you can change the drive letter of the internal floppy disk drive(s) and of the external drive.

WRITE PROTECT YOUR MASTER DISKETTES

The following important precaution prevents you from inadvertently destroying files on your master diskettes.

If you have 3 1/2 inch Diskettes...

Click the Write Protect Tag to the write protect position as shown in the following figure:

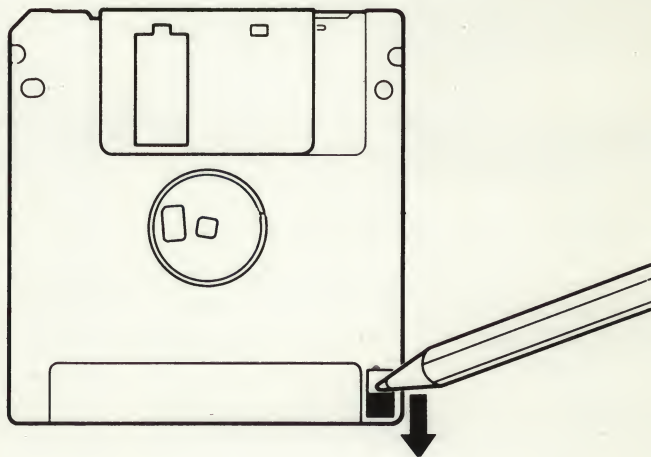


Fig. 2-2 How To Write Protect Your 3 1/2 inch Diskette

If you have 5 1/4 inch Diskettes...

Wrap around a sticky write-protect label around the write protect notch as shown in the following figure:



Fig. 2-3 How To Write Protect Your 5 1/4 inch Diskette

TURNING YOUR COMPUTER ON

After connecting the computer together as instructed in your "Installation and Operations Manual", locate the ON/OFF switch and switch it to ON. Diagnostic tests are now performed.

BOOTSTRAPPING YOUR COMPUTER

Place the master system diskette into the diskette drive of your Personal Computer called drive A. Close the drive door. Press the reset button.

HOW TO INSTALL YOUR SOFTWARE

You can perform a system reset either by pressing the **CTRL**, **ALT** and **DEL** keys simultaneously, or by pressing the system reset button. A system reset has the same effect as switching the Personal Computer off and back on again, but makes less demands on its components.

On the completion of the diagnostic tests, MS-DOS system files are loaded into memory. This process is known as "bootstrapping" or "booting up".

Lastly the following message appears:

A>

This is the MS-DOS system prompt. It indicates that MS-DOS is ready to accept commands from your keyboard.

If you subsequently prepare a hard disk for booting up MS-DOS, and you do not have a system diskette in drive A, your MS-DOS system will boot up from the hard disk, and the system prompt will appear as follows:

C>

If you have a hard disk, but have not prepared it for booting up MS-DOS, when you reset your computer without a diskette in the "A:" drive a message similar to the following will appear:

**Rom BASIC not available,
Press reset to re-boot**

Do as the message says, however you must press the "reset" button on your computer; a keyboard (soft) reset may not work.

HOW TO TERMINATE YOUR WORKING SESSION

You can bring your working session to an end in any one of two ways:

- by switching off the computer using the ON/OFF switch on the back panel. Do **not** switch it off when the hard disk or the floppy disk is in use (this is usually indicated by a light).

- by performing a system reset by pressing the **CTRL**, **ALT** and **DEL** keys simultaneously, or by pressing the hardware reset button. Do **not** reset when the hard disk or the floppy disk is in use, as you may corrupt your files.

THE DEFAULT DRIVE

The **A>** (or **C>**) is the MS-DOS prompt from the command processor. It tells you that MS-DOS is ready to accept commands. For systems that do not have a hard disk you will always load MS-DOS from drive A.

The **A** (or **C**) in the MS-DOS prompt indicates the default disk drive. This means that MS-DOS will search (and then the drives specified in the **PATH** environment variable) that drive for any commands or other file names that you enter. It will perform the specified task on that disk unless you specify a different drive.

For example, if following the **A>** prompt you type:

DIR

then press the **ENTER** key.

then the **DIR** command is executed on the default drive. But if you type:

DIR B:

then press the **ENTER** key.

the **DIR** command is executed on drive B, but drive A remains the default drive. To change the default drive to drive B you must type:

B:

then press the **ENTER** key.

and MS-DOS will respond:

B>

Subsequently, MS-DOS will search only the diskette in drive B until you specify a different default drive.

HOW TO INSTALL YOUR SOFTWARE

DRIVE LETTERS FOR SINGLE DRIVE SYSTEMS

If you have a single diskette drive system it is as though you had a system with two diskette drives, except that drive **A** and drive **B** represent two diskettes instead of two drives. You enter commands exactly as you would using a dual-drive system and MS-DOS will prompt you when you need to change diskettes.

PREPARING WORKING COPIES OF YOUR SYSTEM DISKETTES

It is strongly recommended that you prepare working copies of your MS-DOS System Diskette(s) and of your Keyboard Drivers Diskette. If your working copy becomes damaged, or if the files are accidentally erased, you will still have the files on your master diskette.

The DISKCOPY command copies the contents of one diskette onto another. You can use this command to duplicate the MS-DOS system diskette, or a diskette that contains your own files. DISKCOPY is the fastest way of copying a diskette because it copies the entire diskette in one operation, including MS-DOS system files if they exist. However, note that the DISKCOPY command can only be used where the source and target diskettes have the same capacity.

To make a copy of your MS-DOS master system diskette. First make sure that it is write protected. Then obtain a blank diskette of the same specification as the master diskette, write a label for it copying the label on the master diskette. Make sure the blank diskette is not write protected.

If you have a Single Floppy Disk Drive...

Insert the master diskette in drive A and type:

DISKCOPY
then press **ENTER**

DISKCOPY prompts:

**Insert source diskette in drive A:
Strike any key when ready**

After you have struck any key, DISKCOPY then reads some or all of your source diskette (depending on the main memory capacity of your computer). DISKCOPY then prompts:

**Insert destination diskette in drive A:
Strike any key when ready**

DISKCOPY may prompt you in this way more than once, depending on the main memory storage capacity of your computer.

CAUTION:

You must make sure that you insert the correct source and target diskettes as DISKCOPY does not know the difference. Moreover, you are strongly recommended to write-protect your source diskette to avoid inadvertently overwriting it.

If you have Two Floppy Disk Drives...

Insert the master diskette in drive "A:" and the target diskette in drive "B:", at the "A>" prompt type:

**DISKCOPY A: B:
then press the ENTER key.**

DISKCOPY prompts:

**Insert source diskette in drive A:
Insert destination diskette in drive B:
Strike any key when ready**

As the copying commences a message similar to the following appears on the screen:

Copying 2 side(s), 9 sectors per track

If your target diskette was not formatted, DISKCOPY will format it as it copies. After MS-DOS has copied the diskette, MS-DOS displays:

**Copy complete
Copy another disk (Y/N)?**

HOW TO INSTALL YOUR SOFTWARE

Press **Y** (for Yes) if you wish to copy another diskette with the **DISKCOPY** command. If you press **N** (for No), the default drive prompt is displayed.

If DISKCOPY fails and outputs...

Drive types or diskette types not compatible

Then try formatting the target diskette to have the same capacity as the source diskette. See the following Section "How To Format Your Diskettes".

Keep Your Master Diskettes Safe

From now only use your working copies of MS-DOS and the Keyboard Drivers. Put your master diskettes away in a safe place and only use them for producing new working copies.

Note

If either of the diskettes that you are using has defective tracks, the **DISKCOPY** command will not work reliably. Use the **COPY** (or **XCOPY**) command to back-up your diskettes in these cases. **COPY** will skip over defective tracks. But note that some of the system files are "hidden" and cannot be copied using the **COPY** command. Therefore, before copying your system diskette using the **COPY** command you must format the target diskette using the **FORMAT** command with the **/S** option.

HOW TO FORMAT YOUR DISKETTES

You must format all new diskettes before they can be used by MS-DOS.

A blank diskette must be formatted with the **FORMAT** command. The **FORMAT** command changes the format of the diskette to one that MS-DOS can use. If the diskette is not already blank, formatting it will destroy any data that exists on the diskette.

Formatting places the tracks on a diskette and creates an empty directory for that diskette. The directory is the means by which MS-DOS keeps track of what is on the diskette.

If you type:

FORMAT B:
then press the **ENTER** key.

FORMAT issues the following message:

**Insert new diskette for drive B:
and strike ENTER when ready**

After you insert the new diskette in drive B and have pressed the **ENTER** key, formatting begins and the system keeps you informed of the progress of the **FORMAT** command by responding:

Head: x Cylinder: y

Where the head-value can be 0 or 1, and the cylinder-value increases from 0 to the number of cylinders formatted. When format has finished you will receive a message such as:

**362496 bytes total disk space
362496 bytes available on disk**

Format another (Y/N)?

Press **Y** to format another diskette. Press **N** to terminate the **FORMAT** program.

If you include **/S** at the end of the command line you will cause the **FORMAT** command to copy the system files to the target diskette as well as formatting that diskette. That is, it will give you a diskette from which you can boot MS-DOS. In this case, the system will typically respond:

**362496 bytes total disk space
41984 bytes used by system
320512 bytes available on disk**

HOW TO INSTALL YOUR SOFTWARE

If you include `/V` at the end of the command line you will be given the option to label the diskette. When formatting is complete you will be prompted:

volume label (11 characters. ENTER for none)?

You can enter any valid string up to 11 characters followed by **ENTER**. However, if you do not wish to assign a label to the diskette, simply press **ENTER**. For example you could assign the label **PROGRAMS** to a diskette containing programs. You can use such a label to check that you are using the correct diskette. The label will be displayed if you issue either a **DIR** command or a **VOL** command. If at a later stage you wish to give the diskette a new label use the **LABEL** command (see the "MS-DOS User Guide" for more details).

If you have a High-Capacity 5 1/4 inch Floppy Disk Drive...

Standard formatting in Normal-Capacity drives is 40 tracks, 9 sectors per track. Formatting in High-Capacity drives is 80 tracks, 15 sectors per track. To format diskettes as 40 tracks, 9 sectors per track in a High-Capacity drive use the following command:

FORMAT A: /4

However note that a Normal-Capacity diskette written to in a High-Capacity drive cannot be reliably read in Normal Capacity drives.

To prevent accidental writing to Normal-Capacity diskettes in a High-Capacity drive, write protect these diskettes.

HOW TO LIST THE FILES ON A DISK

When a disk is formatted a directory is placed on that disk. This directory provides the means by which MS-DOS keeps track of the files on that disk. The **DIR** command enables you to display the contents of this directory and hence obtain a list of the files held on that disk. For example, if your copy of the MS-DOS system diskette is in drive "A:" and you type:

DIR A: /W
then press **ENTER**

MS-DOS will respond with a width-wise directory listing of all the files in the current directory on your MS-DOS system diskette. The display will look similar to this:

Volume in drive A is SYS(3.20)
Directory of A:\

ANSI	SYS	ASSIGN	COM	ATTRIB	EXE	CHKDSK	COM	COMMAND	COM
COMP	COM	DISKCOMP	COM	DISKCOPY	COM	DRIVER	SYS	EDIT	EXE
FIND	EXE	FORMAT	COM	GRAFTABL	COM	GRAPHICS	COM	GWBasic	EXE
JOIN	EXE	LABEL	COM	MODE	COM	MORE	COM	PRINT	COM
RECOVER	COM	REPLACE	EXE	SELECT	COM	SHARE	EXE	SORT	EXE
SUBST	EXE	SYS	COM	TREE	COM	VDISK	SYS	XCOPY	EXE

30 File(s) 27648 bytes free

Fig. 2-4 Directory Example

Two MS-DOS system files are "hidden" files and will not appear when you issue the DIR command.

You can also get information about any file on your disk by entering DIR and a file name. For example, if you have created a file named MYFILE.TXT on the disk in the default drive, and you type:

DIR MYFILE.TXT
then press **ENTER**

MS-DOS will respond with a display of the size of the file in bytes along with the date and time at which the file was created or last modified.

HOW TO INSTALL YOUR SOFTWARE

AUTOMATIC PROGRAM EXECUTION

If you want to run a specific program or list of programs automatically each time you start MS-DOS, you can do so with automatic program execution. For example, you may want to have MS-DOS display the names of your files each time you load MS-DOS.

When you start MS-DOS, the command processor searches for a file named AUTOEXEC.BAT in the root directory of the MS-DOS system disk. This is a batch file that MS-DOS will run each time MS-DOS is started. The "MS-DOS User Guide" tells you how to create an AUTOEXEC.BAT file.

SETTING UP YOUR DISK FOR NATIONAL SUPPORT

KEYBOARD AND SCREEN SUPPORT

When you start MS-DOS, input from the keyboard and output to the screen is handled by the BIOS (the Basic Input Output System). Initially this expects the keyboard to have USA characters on it. However your national keyboard may differ from the USA one, and the characters that appear on the screen may also differ. Your operating system disk needs to be set up so that it automatically reconfigures the BIOS to cope with your national requirements. See the "Keyboards and Fonts" Chapter for details of the programs which reconfigure the BIOS.

If you have a USA ASCII keyboard your system will automatically interpret the characters you type at the keyboard correctly. If you have a national version, however, you must install an appropriate "keyboard driver" each time you start up your system and possibly you need to install an extension to the built-in "font table". A keyboard driver provides the tables that tell the system what code to generate for each key pressed. A font table provides the characters that are displayed on the screen. The command GRAFTABL contains the font tables for extensions to the ASCII character set (see Chapter 5 of the "MS-DOS User Guide" for details of this command and see Appendix A of the "MS-DOS User Guide" for the tables illustrating the font). Your particular national keyboard may require a different command to load your national font (see the Chapter "Keyboards and Fonts").

In addition to national version tables, your system contains tables for the standard USA ASCII keyboards. As soon as you reboot your

system, the appropriate USA ASCII driver for your keyboard is reinstalled.

If you wish a specific keyboard driver and font to be loaded automatically immediately after bootstrap you must create an AUTOEXEC.BAT file with the national keyboard driver file name and font name as an instruction. Of course you have to ensure that the national keyboard driver is present on the system diskette you use to boot up your system. See Chapter 4 of the "MS-DOS User Guide" for more information on AUTOEXEC.BAT files.

Note that it is not necessary to enter the file extension ".COM" when calling a national keyboard driver.

Note also that your system diskette may already be customized, with the appropriate AUTOEXEC.BAT file and transferred keyboard driver, when you receive it. If you are in doubt, try those keys on the keyboard that differ between USA ASCII and your national version. You will soon see whether you have the correct driver installed.

Calling The USA ASCII Driver

When a national keyboard driver is installed, it is possible to call the USA ASCII keyboard version by using the three-key combination **CTRL ALT F1**. When you do this, you can return to the national keyboard version by using another three-key combination, **CTRL ALT F2**.

Such swapping between national and USA ASCII versions may be necessary in order to use certain application or communication packages.

HOW TO INSTALL YOUR SOFTWARE

Key combinations are summarized as follows:

KEY COMBINATION	ACTION
CTRL ALT F1	Calls the USA ASCII keyboard driver
CTRL ALT F2	Calls the national keyboard driver

MS-DOS COUNTRY SPECIFIC OPERATIONS SUPPORT

DOS can be configured for different country's requirements for

- date
- time
- currency symbol
- decimal separator

This is achieved by setting the variable

`COUNTRY = country-code`

in the CONFIG.SYS file. (See Appendix C in the "MS-DOS User Guide" for more details.)

DISPLAYING THE CHARACTER SET

To display the character corresponding to a given ASCII code (decimal 1-255), type:

`ALT number`

where *number* is the three-digit decimal code for the character. Use the numeric keypad **not** the numbers on the top row of the main body of the keyboard.

Note that some of the characters in the ASCII range 1-32 cannot be reproduced on the screen, using this technique. You cannot generate the ESC character (decimal 27) using this technique, use the Video Editor instead (see Chapter 6 of the "MS-DOS User Guide").

Appendix A of the "MS-DOS User Guide" shows the complete character set of extended ASCII.

If you have a Non USA Keyboard...

You may be having difficulty in typing certain characters, in particular: the : \ | characters. The following table gives the ALT key combinations to ameliorate this difficulty. Indeed using the keyboard reassignment facilities of ANSI Escape Sequences, it is possible to assign these keys to function keys (see Appendix B of the "MS-DOS User Guide").

To generate character	Press ALT and the numbers on the numeric pad
:	5 then 8
\	9 then 2
	1 then 2 then 4
~	1 then 2 then 6
.	9 then 6

HOW TO INSTALL YOUR SOFTWARE

THE SELECT COMMAND

If you have a Non USA Keyboard...

This command creates a working copy of the MS-DOS System with an AUTOEXEC.BAT and CONFIG.SYS that correctly initializes the computer for your keyboard and national conventions for time and date. See the Chapter "Keyboards and Fonts" and either the Chapter "Floppy Disk Systems" or the Chapter "Hard Disk Systems" for more details.

THE HARD DISK

See the "Hard Disk Systems" Chapter for more details of the following commands.

THE FDISK COMMAND

Before you can format your hard disk you have to create an MS-DOS partition. The FDISK Command calls a menu driven program, which takes you through the steps of creating one or more MS-DOS Partitions. Only the partition which corresponds with the "C:" drive can be made bootable.

THE FORMAT COMMAND

If you have a USA Keyboard...

The hard disk drive(s) have to be formatted before they can be utilized by MS-DOS. If you wish to have a bootable drive "C:", at the "A>" prompt type:

```
FORMAT C: /S /V  
then press ENTER
```


THE COPY COMMAND

If you have a USA Keyboard...

Copy the MS-DOS system disk (and supplementary disk) onto the hard disk using the following command. At the "A>" prompt, type:

```
COPY A:*.* C: /V  
then press ENTER
```

THE SELECT COMMAND FOR A HARD DISK

If you have a Non USA Keyboard...

Use the SELECT command to format and copy the system files from the MS-DOS System Diskette to the "C:" drive. See the "Keyboards and Fonts" Chapter and the "Hard Disk Systems" Chapter for more details.

3. KEYBOARDS AND FONTS

ABOUT THIS CHAPTER

This chapter lists all the Olivetti Personal Computer keyboards. It tells you how to call the keyboard driver and the font driver, which support your national requirements. It discusses the particularities of the various national keyboards.

CONTENTS

INTRODUCTION	3-1	KEYS WITH INVISIBLE CHARACTERS	3-13
KEYBOARD DRIVERS	3-1		
FONTS	3-3		
SETTING UP YOUR SYSTEM DISK	3-3		
THE SELECT COMMAND	3-3		
NATIONAL KEYBOARDS	3-5		
KEYBOARD LAYOUTS	3-5		
MULTI-CHARACTER KEYS	3-9		
SWISS-GERMAN SWISS-FRENCH KEYBOARD	3-10		
GREEK KEYBOARD	3-11		
PORTUGAL KEYBOARD	3-11		
DEAD SYMBOLS	3-12		

KEYBOARDS AND FONTS

INTRODUCTION

When you start MS-DOS, input from the keyboard and output to the screen is handled by the BIOS (the Basic Input Output System). Initially this expects you to have a USA keyboard. However your national keyboard may differ from the USA keyboard, and the characters that appear on the screen may also differ.

If you have a non-USA keyboard, your operating system disk needs to be set up so that it automatically reconfigures the BIOS to cope with your national requirements.

If you have a USA ASCII keyboard your system will automatically interpret the characters you type at the keyboard correctly. If you have a national version, however, you must install an appropriate "keyboard driver" each time you start up your system and possibly you need to install an extension to the built-in "font table". A keyboard driver provides the tables that tell the system what code to generate for each key pressed. A font table provides the appearance of the character that appears on the screen.

KEYBOARD DRIVERS

When received, your system is configured to recognize the USA ASCII version of the keyboard. If you have a national keyboard you **MUST** execute the following procedure to define your keyboard to the system.

Refer to the following table to find the driver name corresponding to your national keyboard version.

NATIONAL VERSION	DRIVER NAME	FONT NAME
Denmark	KEYBDA	NORDIC
France	KEYBFR	GRAFTABL
Germany	KEYBGR	GRAFTABL
Greece	GREEK	
Italy	KEYBIT	GRAFTABL
Norway	KEYBNO	NORDIC
Portugal	KEYBPO	PORTUGAL
Spain International	KEYBSP	GRAFTABL
Spain	SPAIN1	
Sweden/Finland	KEYBFS	GRAFTABL
Swiss-French	KEYBSF	GRAFTABL
Swiss-German	KEYBSG	GRAFTABL
United Kingdom	KEYBUK	GRAFTABL

Remove the MS-DOS system diskette and insert the diskette containing the Keyboard Drivers into drive "A:". At the "A>" prompt, type:

KEYxx
then press ENTER

or

GREEK
then press ENTER

or

SPAIN1
then press ENTER

Where

xx corresponds to the two letters that specify your keyboard type.

For Example

KEYBIT

KEYBOARDS AND FONTS

FONTS

A font table provides the characters that are displayed on the screen. The command listed in the "FONT NAME" column in the above table loads your national font.

For Example

If you have an Italian keyboard, at the "A>" prompt, type:

```
GRAFTABL  
then press ENTER
```

GRAFTABL contains the font tables for extensions to the ASCII character set (see Chapter 5 of the "MS-DOS User Guide" for details of this command and see Appendix A of the "MS-DOS User Guide" for the tables illustrating the fonts). Your particular national keyboard may require a different command to load your national font. Enter the font name corresponding to your keyboard.

SETTING UP YOUR SYSTEM DISK

To save typing in the above commands to call the keyboard driver and font every time you reset your computer, it is better to have the commands in an AUTOEXEC.BAT file. You must make sure that the national keyboard driver is present on the system diskette you use to boot up your system.

Note also that your system diskette may already be customized, with the appropriate AUTOEXEC.BAT file and transferred keyboard driver, when you receive it. If you are in doubt, try those keys on the keyboard that differ between USA ASCII and your national version. You will soon see whether you have the correct driver installed.

THE SELECT COMMAND

This command creates a working copy of the MS-DOS System with an AUTOEXEC.BAT and CONFIG.SYS that correctly initializes the computer for your keyboard and National conventions for time and date. The following table shows the *keyboard-type* and *country-code* you will need as parameters to the SELECT command:

NATIONAL VERSION	<i>keyboard-type</i>	<i>country-code</i>
Denmark	DA	045
France	FR	033
Germany	GR	049
Italy	IT	039
Norway	NO	047
Portugal	PO	351
Spain International	SP	034
Sweden	FS	046
Swiss-French	SF	041
Swiss-German	SG	041
United Kingdom	UK	044
United States	US	001

Tab. 3-1 Keyboard Type and Country Code For The Select Command

The specified *country-code* becomes a parameter to the COUNTRY command in the CONFIG.SYS; this command enables MS-DOS to use the correct conventions for national time, date, currency and decimal separators.

The *keyboard-code* is a two letter code representing the last two letters of the name of the driver. *keyboard-code* does not exist for Greece and Spain National, therefore for these countries it is not possible to use SELECT. Note also that for the United States of America the *keyboard-code* is **US**, however there is no corresponding driver. This is because the USA driver is built into the computer's BIOS.

If you have a Floppy Disk Based System...

Chapter 4 "Floppy Disk Systems" tells you how to use the SELECT command to install MS-DOS on floppy disk.

If you have a Hard Disk Based System

Chapter 5 "Hard Disk Systems" tells you how to use the the SELECT command to install MS-DOS on your hard disk.

KEYBOARDS AND FONTS

NATIONAL KEYBOARDS

KEYBOARD LAYOUTS

See Appendix A for drawings of the layouts of Olivetti Personal Computer Keyboards. The following tables list the range of keyboards.

The first table lists the Olivetti Industry Compatible keyboards:

TYPE	NATIONALITY	NUMBER OF KEYS	COMMENT
Industry Compatible	Denmark	83	Has NUM LOCK (default is function on number pad)
	Finland Sweden		
	France		
	Italy		
	Norway		
	Portugal		
	Spain International		
	Swiss French		
	Swiss German		
	United Kingdom		
	USA		

The following table lists the Olivetti Extended keyboards:

TYPE	NATIONALITY	NUMBER OF KEYS	COMMENT
Olivetti Extended	Denmark	102	Has FUNCT LOCK (default is numeric on number pad)
	Finland Sweden		
	France		
	Germany		
	Greece		
	Italy		
	Norway		
	Portugal		
	Spain		
	Spain International		
	Swiss French		
	Swiss German		
	United Kingdom		
	USA		

KEYBOARDS AND FONTS

The following table lists the Olivetti Family keyboards:

TYPE	NATIONALITY	NUMBER OF KEYS	COMMENT
Olivetti Family	Denmark	86	Has SYS REQ1 on M28 PC/WP on M19
	Finland Sweden		
	France		
	Germany		
	Greece		
	Italy		
	Norway		
	Portugal		
	Spain		
	Spain International		
	Swiss French		
	Swiss German		
	United Kingdom		
	USA		

The following table lists the Olivetti keyboards for the M15:

TYPE	NATIONALITY	NUMBER OF KEYS	COMMENT
Olivetti M15	Denmark	78	
	Finland/Sweden		
	France		
	Germany		
	Italy		
	Norway		
	Spain International		
	Swiss		
	United Kingdom		
	USA		

KEYBOARDS AND FONTS

MULTI-CHARACTER KEYS

On some National keyboards, there are a number of keys marked with more than two symbols.

Depending on the position of the symbol on the key, there is a specific combination of other, special keys that must be pressed and held down before pressing the particular key you want.

There is a total of five possible symbol positions on any key marked with more than two symbols, although not all of them will necessarily be found on all such keys.

Position 1 On a key marked with three or more symbols on the top, this is the symbol on the bottom left-hand corner of the key.

It is selected by pressing the key by itself.

Position 2 Again, for the same type of key, this is the symbol marked on the top left-hand corner of the key.

It is selected by pressing **SHIFT KEY** simultaneously.

Position 3 This is the symbol marked on the bottom right-hand corner of the key.

It is selected by pressing **ALT KEY** simultaneously.

Position 4 This is the symbol marked on the top right-hand corner of the key.

It is selected by pressing **ALT SHIFT KEY** simultaneously.

Position 5 This is the symbol marked on the front of some keys.

It is selected by pressing **ALT CTRL KEY** simultaneously. Unless you have the Spanish National keyboard (keyboard driver name: SPAIN1), in this case, the symbol marked on the front of a key is selected by pressing **ALT SHIFT KEY** simultaneously.

Multi-character keys Some keys generate up to five characters. The position of these five characters on the key is shown in the following figure:

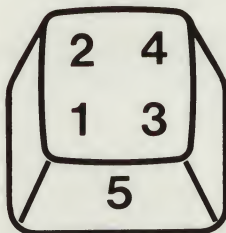


Fig. 3-2 Multi-character Key Top

SWISS-GERMAN/SWISS-FRENCH KEYBOARD

The Swiss Keyboard supports both Swiss-French and Swiss-German requirements. However, to use the keyboard in one mode or the other, the appropriate keyboard driver must be loaded. Please note that although some keys have four symbols marked on them, only one pair of them will be active according to which keyboard driver you have loaded.

Thus, if you have loaded the Swiss-German keyboard driver, the two symbols on the left-hand side of the key will be selected by following the instructions given for symbol positions 1 and 2.

If you have loaded the Swiss-French keyboard, the two symbols on the right-hand side of the key will be selected, but nevertheless you should still follow the instructions given for symbol positions 1 and 2.

KEYBOARDS AND FONTS

The drivers affect the following three keys, as illustrated:

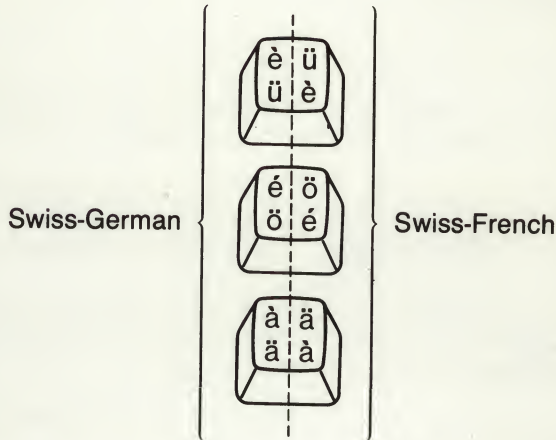


Fig. 3-3 Swiss Keyboard Variations

GREEK KEYBOARD

The Greek keyboard allows the entry of Latin as well as Greek characters. At start-up the keyboard is set to enter Latin characters. To change from Latin character entry to Greek character entry, press down the **ALT** and **ENTER** keys simultaneously. To change back, press the same keys again simultaneously: **ALT** and **ENTER**.

PORTUGAL KEYBOARD

The characters ü and Ü with diaeresis points are generated by pressing the tilde key followed by the lower case or upper case **U** as required.

DEAD SYMBOLS

Some National keyboards support certain symbols that can be used only in conjunction with another key they cannot be used on their own. Such symbols are called "dead symbols". The dead symbols are shown below.

' ^ ° ¨ ~

These symbols are used to generate lesser-used accented characters not available as separate keyboard characters.

For each keyboard version, there is a set of valid dead symbol combinations. To generate an accented character, the dead symbol must be pressed first; MS-DOS then checks the next character entered to ensure that a valid combination has been entered. If the combination is invalid the symbol and the character will be displayed on the screen, and the system will generate a "beep". (Note that in this case, the symbol will appear on the screen as ■ .)

The following table shows the possible dead symbol/character combinations for each of the National keyboard versions:





















KEYBOARDS AND FONTS

KEYBOARD	DEAD SYMBOLS SUPPORTED	VALID CHARACTERS
FRANCE	" ^	ä Ä ë ï ö Ö ü Ü ÿ â ê î ô û
GERMANY	' ^	á é Ê í ó ú â è ì ò ù
GREECE	' "	ά έ η ί ó ú ω τ υ Ά Ε Η Ι Ο Υ Ω
PORTUGAL	' ^ ~ "	á é í ó ú Á Ê Í Ó Ú à è ì ò ù À È Ì Ò Ù ã ê õ Â Ê Õ ã õ ñ Ã Õ Ñ ü Ü
SPAIN INTERNATIONAL, NORWAY, DENMARK, SWEDEN/FINLAND NORWAY	' ^ "	á é Ê í ó ú â è ì ò ù â ê î ô û ä ë ï ö ü ÿ Ä Ö Ü
SPAIN	' ^ "	á é í ó ú Á Ê Í Ó Ú à è ì ò ù À È Õ ä ë ï ö ü ÿ Ä Ö Ü
SWISS-FRENCH SWISS-GERMAN	' ^ ~ "	á é í ó ú É à è ì ò ù â ê î ô û ä ë ï ö ü ÿ Ä Ö Ü

KEYS WITH INVISIBLE CHARACTERS

The National versions of the M24 Keyboard 2 for France, Germany, Italy, Spain International and Switzerland support characters not shown on the keyboard, but which can be generated.

These invisible characters, and the key combinations required to generate them, are listed in the following table:

COUNTRY	INVISIBLE KEY	KEY COMBINATION
FRANCE		ALT SHIFT 
	{	ALT SHIFT 
	}	ALT SHIFT 
	~	ALT SHIFT 
GERMANY		ALT SHIFT 
	{	ALT SHIFT 
	}	ALT SHIFT 
	~	ALT SHIFT 
ITALY	'	ALT SHIFT 
		ALT SHIFT 
	{	ALT SHIFT 
	}	ALT SHIFT 
SPAIN INTERNATIONAL	~	ALT SHIFT 
	'	ALT SHIFT 
		ALT SHIFT 
	{	ALT SHIFT 
SWISS-FRENCH	}	ALT SHIFT 
	'	ALT 
	'	ALT SHIFT 
	'	ALT SHIFT 

4. FLOPPY DISK SYSTEMS

ABOUT THIS CHAPTER

This chapter tells you to install MS-DOS, if you only have floppy disk drive(s). It tells you how to upgrade an existing system diskette or how to prepare a new system diskette.

CONTENTS

INTRODUCTION	4-1	USING THE SELECT COMMAND TO INSTALL A SYSTEM DISKETTE	4-5
TO UPGRADE AN EXISTING SYSTEM DISKETTE TO VER. 3.20	4-1		
USING THE SYS COMMAND TO INSTALL MS-DOS VER. 3.20 HIDDEN FILES	4-1		
USING THE REPLACE COMMAND TO UPDATE AN EXISTING FLOPPY DISK	4-2		
TO INSTALL MS-DOS VER. 3.20 ON A NEW SYSTEM DISKETTE	4-3		
USING THE FORMAT COMMAND TO INITIALIZE A SYSTEM DISKETTE	4-3		
COPYING SYSTEM FILES AND EXTERNAL COMMANDS	4-4		

FLOPPY DISK SYSTEMS

INTRODUCTION

The kind of diskette you can use depends upon the drive type. It is essential to use the correct type of diskette for the drive and the kind of operation that is going to be performed. See Chapter 2 for details of the kind of diskettes you can use in your floppy disk drives. Also see Chapter 2 for information on how to turn your machine on, insert a system diskette into the "A:" disk drive and boot-strap the operating system. If you have followed these instructions, after the copyright notice has been displayed you should see the MS-DOS prompt:

A>

Place the existing System diskette you wish to upgrade in drive "B:".

If you have a Single Floppy Disk Drive...

Follow the instructions as though you have two disk drives; the source is logical drive "A:" and the target is logical drive "B:". You will be prompted to insert the diskette for drive "A:" or for drive "B:". You are advised to write-protect the source diskette. Be careful to insert the correct diskette when prompted.

TO UPGRADE AN EXISTING SYSTEM DISKETTE TO VER. 3.20

USING THE SYS COMMAND TO INSTALL MS-DOS VER. 3.20 HIDDEN FILES

Having boot-strapped the computer with the MS-DOS Ver. 3.20 System disk, at the "A>" prompt, type:

SYS B:
then press **ENTER**

If it is possible to copy the hidden system files to the diskette in drive "B:", you will see the following message:

System transferred

Sometimes, however it is not possible to transfer the new hidden system files to the target diskette. In this case you will see the message:

SYS cannot install MS-DOS on this disk

or

Not enough room for MS-DOS on this disk

If you get either of these two messages, the target disk will not have been corrupted. Instead install MS-DOS Ver. 3.20 on another diskette as instructed in the Section "Formatting A Diskette With An MS-DOS System". Then use the REPLACE Command as instructed in the following Section.

USING THE REPLACE COMMAND TO UPDATE AN EXISTING FLOPPY DISK

At the "A>" prompt, with the new MS-DOS System disk in the "A:" drive, type:

```
REPLACE A:*. * B:\ /P /S  
then press ENTER
```

The REPLACE Command will read the files on the target diskette and will prompt you as to whether to replace them, if a file of the same name exists on the source diskette. For example:

Add AUTOEXEC.BAT? (Y/N)

For AUTOEXEC.BAT, it will probably be advisable to answer N. For COMMAND.COM and other MS.DOS files answer Y. REPLACE will confirm replacement:

Replacing B:\COMMAND.COM

FLOPPY DISK SYSTEMS

With the /S switch REPLACE searches sub-directories as well as the root directory for files to replace. Upon completion REPLACE tells you how many files have been replaced. For example:

20 File(s) replaced

TO INSTALL MS-DOS VER. 3.20 ON A NEW SYSTEM DISKETTE

There are two approaches to installing MS-DOS, the first approach is to use the FORMAT command, then to copy over the system files and external commands you require and then to create a CONFIG.SYS file and AUTOEXEC.BAT. The second approach is to use SELECT.

If you have a Non USA Keyboard...

Use the SELECT command to install MS-DOS with national keyboard and font support (see the Section "Using The SELECT Command To Install A System Diskette").

USING THE FORMAT COMMAND TO INITIALIZE A SYSTEM DISKETTE

With the Master System diskette in the "A:" drive and a new diskette in the "B:" drive, at the "A>" prompt, type:

FORMAT B: /S
then press **ENTER**

FORMAT prompts you:

Insert new diskette for drive B:
and strike ENTER when ready.

Press **ENTER** to start formatting. **FORMAT** informs you of its progress with the the head and cylinder number being formatted. When the formatting is finished, the operating system is transferred. This includes the hidden files and **COMMAND.COM**. The successful transfer of the system is confirmed with the following message:

**Format complete
System transferred**

If either of the first two track of the target diskette are faulty, **FORMAT** will display:

Disk unsuitable for system disk

However it is possible to use this diskette as a data diskette.

COPYING SYSTEM FILES AND EXTERNAL COMMANDS

Decide which of the System files and external commands you will need on your target disk. Then use the **COPY** command to copy them from the source to the target diskette. The following example illustrates using **COPY** for copying the **SYS** files. With the System disk in "A:" at the "A>" prompt, type:

```
COPY *.SYS B: /V  
then press ENTER
```

The **/V** switch causes a verification of the copying. The system files **ANSI.SYS**, **DEVICE.SYS** and **VDISK.SYS** will be copied onto the diskette in "B:".

See Chapter 6 "Configuring And Initializing MS-DOS" for details on setting up an **AUTOEXEC.BAT** and a **CONFIG.SYS**.

FLOPPY DISK SYSTEMS

USING THE SELECT COMMAND TO INSTALL A SYSTEM DISKETTE

The **SELECT** command automates the preparation of a system diskette, including preparing a **AUTOEXEC.BAT** and **CONFIG.SYS** for you. However you will still need to add commands to **AUTOEXEC.BAT** and **CONFIG.SYS**, so also see Chapter 6 "Configuring And Initializing MS-DOS".

Before you enter this command you will need to know your *country-code* and *keyboard-code*. See the Section "The **SELECT** Command" in Chapter 3 for a table of these codes.

Bootstrap the computer with the System Disk in the "A>" drive.

If you have a Non USA Keyboard...

You will need the Keyboard Drivers Diskette that can be found in the Computer's Starter Kit. Place this Keyboard Driver Diskette in drive "A>" and enter the name of the Keyboard Driver which corresponds to your keyboard. Now that the keyboard driver is installed the characters embossed on the keyboard correspond to the characters entered into the computer. Replace your MS-DOS System Diskette into drive "A:" and a new diskette into drive "B:".

The **SELECT** Command

Make sure the MS-DOS System diskette is in the "A:" drive. At the "A>" prompt, type:

```
SELECT B: country-code keyboard-code
then press  ENTER
```

The computer responds:

```
SELECT is used to install DOS the first
time. SELECT erases everything on the
specified target and then installs DOS.
Do you wish to continue (Y/N)? Y
```


If you wish to proceed press **ENTER**, otherwise type **N**, then press **ENTER**. **SELECT** then asks you:

Is KEYBXX.COM on another diskette (Y/N)?

As the Keyboard Drivers Diskette is separate from the System Diskette, answer **Y** to this question. **SELECT** will now use the **FORMAT** command to format the diskette in the "B:" drive. You will be asked to:

**Insert new diskette for drive B:
and strike ENTER when ready**

Press **ENTER** to start formatting. The diskette in the "B:" drive will now be formatted. After the format has finished you will be asked:

Format another (Y/N)?

Press **N** in reply.

You will then be prompted to insert the Keyboard Drivers Diskette into the "A:" drive. For example:

**Insert KEYBIT.COM diskette in drive A:
Strike any key when ready**

Press any typing key. The computer will then copy the keyboard driver to the target diskette. You will then be prompted to replace your system disk. All the files on the system disk will be copied to the target disk. Note that if there is insufficient room on the target disk, you can delete **SELECT.COM** from the target disk, and then use **COPY** to copy over the missing file(s).

5. HARD DISK SYSTEMS

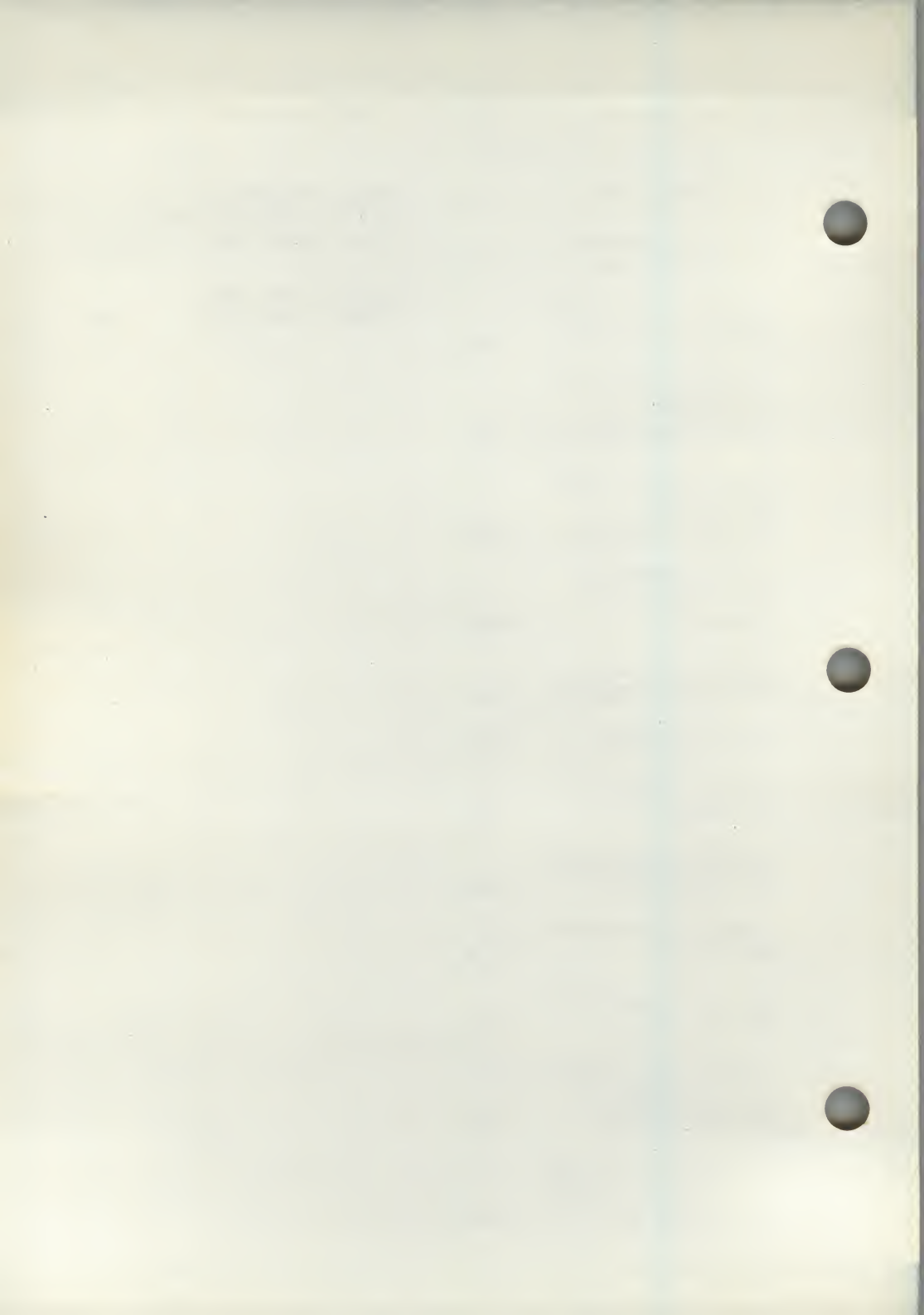
ABOUT THIS CHAPTER

This chapter tells you how to install MS-DOS, if you have a hard disk. It tells you how to upgrade an existing system disk or how to prepare a hard disk from scratch. The FDISK program described enables you to partition fixed (hard) disk(s). The procedures for partitioning single and multiple MS-DOS partitions for one or two fixed disks are described. The method of formatting and transferring the operating system to the logical "C:" drive is described. The method of formatting the other MS-DOS partitions is also described.

CONTENTS

INTRODUCTION	5-1	HOW TO USE THE ENTIRE FIXED DISK AS AN MS-DOS PARTITION	5-7
TO UPGRADE A HARD DISK TO MS-DOS VER. 3.20	5-1	CREATING THE MS-DOS PARTITION WHEN THERE ARE NON DOS PARTITIONS	5-9
USING THE SYS COMMAND TO INSTALL THE HIDDEN SYSTEM FILES	5-1	HOW TO CREATE THE MS-DOS PARTITION	5-10
USING THE REPLACE COMMAND TO UPDATE EXISTING FILES	5-2	HOW TO CHANGE THE ACTIVE PARTITION	5-14
HOW TO BACKUP YOUR HARD DISK	5-3	HOW TO DELETE THE MS-DOS PARTITION	5-16
HOW TO RESTORE YOUR HARD DISK	5-4	HOW TO DISPLAY THE FIXED DISK PARTITION MAP	5-17
HOW TO SET UP YOUR HARD DISK FROM SCRATCH	5-5	FDISK: SETTING UP MULTIPLE PARTITIONS	5-18
HOW TO USE FDISK TO PARTITION YOUR FIXED DISK	5-5		

INTRODUCTION	5-18	USING SELECT TO INSTALL MS-DOS ON YOUR HARD DISK	5-41
HOW TO PREPARE THE FIXED DISK	5-19	BOOTSTRAPPING YOUR COMPUTER	5-43
HOW TO PARTITION YOUR FIXED DISK	5-20		
PARTITIONING WITH NO MS-DOS PARTITIONS DEFINED	5-21		
PARTITIONING WITH PARTITIONS ALREADY DEFINED	5-23		
HOW TO CHANGE THE ACTIVE PARTITION	5-29		
FDISK FOR TWO FIXED DISK DRIVES	5-32		
INTRODUCTION	5-32		
DRIVE LETTER ASSIGNMENTS	5-35		
MAKING YOUR FIXED DISK BOOTABLE	5-36		
FORMATTING YOUR HARD DISK	5-38		
FORMATTING THE C: DRIVE	5-39		
FORMATTING HARD DISKS DRIVES OTHER THAN C:	5-40		
TRANSFERRING THE OPERATING SYSTEM TO HARD DISK	5-41		



HARD DISK SYSTEMS

INTRODUCTION

If you wish to upgrade an existing version of MS-DOS on hard disk (fixed disk) to MS-DOS Version 3.20, use the SYS command to transfer the hidden files from the MS-DOS Ver. 3.20 System diskette to the bootable partition of the hard disk. Then use the REPLACE command to upgrade your hard disk system files. However even if you have an existing partitioned and formatted hard disk, you may decide to re-partition and format it. This is particularly relevant if you are upgrading from MS-DOS Version 2.11, as repartitioning and re-formatting will give you better performance for hard disks of over 16 Mbytes.

If you wish to repartition and reformat see the Sections "How To Backup Your Hard Disk", "How To Restore Your Hard Disk" and "How To Set Up Your Hard Disk From Scratch".

If you have new Hard Disk(s) see the Section "How To Set Up Your Hard Disk From Scratch".

TO UPGRADE A HARD DISK TO MS-DOS VER. 3.20

USING THE SYS COMMAND TO INSTALL THE HIDDEN SYSTEM FILES

Having bootstrapped the computer with the MS-DOS Ver. 3.20 System disk, at the "A>" prompt, type:

```
SYS C:  
then press ENTER
```

If it is possible to copy the hidden system files to drive "C:", you will see the following message:

System transferred

Sometimes, however it is not possible to transfer the new hidden system files to the target. In this case you will see the message:

SYS cannot install MS-DOS on this disk

or

Not enough room for MS-DOS on this disk

If you get either of these two messages, the target disk will not have been corrupted. Instead use the "BACKUP" command to backup your hard disk, then repartition and reformat the disk.

USING THE REPLACE COMMAND TO UPDATE EXISTING FILES

At the "A>" prompt, with the new MS-DOS in the "A:" drive, type:

```
REPLACE A:*. * C:\ /P /S  
then press ENTER
```

The REPLACE Command will read the files on the target disk and will prompt you as to whether to replace them, if a file of the same name exists on the source diskette. For example:

Add AUTOEXEC.BAT? (Y/N)

For AUTOEXEC.BAT and CONFIG.SYS, it will probably be advisable to answer N. For COMMAND.COM and other MS.DOS files answer Y. REPLACE will confirm replacement:

Replacing B:\COMMAND.COM

HARD DISK SYSTEMS

With the /S switch REPLACE searches sub-directories as well as the root directory for files to replace. Upon completion REPLACE tells you how many files have been replaced. For example:

20 File(s) replaced

HOW TO BACKUP YOUR HARD DISK

Before you repartition and reformat your hard disk, backup the hard disk to diskettes.

Note

Format sufficient backup diskettes before you use the BACKUP command.

At the "C>" prompt, type:

BACKUP C:*.* A: /S
then press **ENTER**

The command will prompt:

Insert backup diskette 01 in drive A:

**WARNING ! Files in the target drive
A:\ root directory will be erased
Strike any key when ready**

Do as the message instructs. When diskette "01" is full, you will be prompted to insert diskette "02", and so on until all the files on "C:" are backed up. Number and label the diskettes carefully; when the hard disk is restored the diskettes have to be inserted in the same order as they were backed up.

HOW TO RESTORE YOUR HARD DISK

Before you restore your hard disk, follow the instructions in the Section "How To Set Up Your Hard Disk From Scratch". Before you restore the root directory of the hard disk carry out the following procedure. At the MS-DOS prompt, type:

1. C:
Then press **ENTER**
2. CD \
3. COPY CON IO.SYS
Then press **ENTER**
4. Type:
This is a dummy file!
5. Press **F6**
6. Press **ENTER**

The computer will respond:

1 File(s) copied

7. Type:
COPY IO.SYS MSDOS.SYS
Then press **ENTER**

You have now created two dummy files called IO.SYS and MSDOS.SYS. These have the same name as the hidden system files used by MS-DOS Ver. 2.11 and Ver. 3.10.

At the "C>" prompt, type:

RESTORE A: C:*. * /S/P
then press **ENTER**

The command will prompt you:

Insert backup diskette 01 in drive A:
Strike any key when ready

HARD DISK SYSTEMS

Do as the command instructs. Be careful to insert the diskettes in the same order as that in which they were backed up.

As the /P switch is specified, you will be prompted before the command restores a file which was changed after it was backed up:

filename

**Warning! The file above was changed after it was backed up.
Replace the file (Y/N)?**

Answer N, if *filename* is IO.SYS, MSDOS.SYS, COMMAND.COM or any of the other files supplied on your MS-DOS Ver. 3.20 System or Supplementary Diskettes. When you have finished restoring files to the hard disk, the dummy IO.SYS and MSDOS.SYS can be deleted.

HOW TO SET UP YOUR HARD DISK FROM SCRATCH

If your Olivetti Personal Computer has a hard (fixed) disk there are several steps you will need to take before you can use it with MS-DOS.

The MS-DOS command that you will use to set up your hard (fixed) disk is called the "Fixed Disk Setup Program". It uses a series of video display menus and prompts that guide you through the operations step by step.

HOW TO USE FDISK TO PARTITION YOUR FIXED DISK

Note that the maximum fixed disk size available to a single partition of MS-DOS is 32 MB. If you have a fixed disk of 32 MB or less it is possible to assign the entire fixed disk to MS-DOS as described in the Section "How To Use The Entire Fixed Disk As An MS-DOS Partition"

If you have a fixed disk with a capacity greater than 32 MB, this software gives you the facility to have more than one MS-DOS partition. You are permitted a maximum of four MS-DOS partitions on a fixed disk drive, each partition must not exceed 32 MB. This gives you the facility to address the whole of such disks from MS-DOS. For the procedure to create multiple MS-DOS partitions see the Section "Setting Up Multiple MS-DOS Partitions".

If your Personal Computer has two fixed disk drives, the FDISK command can create MS-DOS partitions on each physical drive. For the relevant procedures see the Section "FDISK For Two Fixed Disk Drives".

If you intend to use operating systems in addition to MS-DOS, such as XENIX, Concurrent DOS, UCSD p-System, or PCOS, then you will need to reserve space for these non-MS-DOS partitions. Other operating systems are named "non DOS", except for XENIX. For information on how to set up the XENIX partitions refer to the "XENIX Installation and System Administration Guide". If you are going to install XENIX on your fixed disk, you must do so before you install MS-DOS, but remember to reserve space for MS-DOS. For information on how to set up the other operating systems' partitions refer to the appropriate operating system "User Guide". Note that the maximum number of partitions allowed are four. For example XENIX takes up three partitions, the first partition for the bad track tables, named "Table"; the second partition containing the XENIX bootable root, named "XENIX"; the third partition containing the "USR" directories, also named "XENIX". If XENIX is present on a hard disk, this leaves one partition for MS-DOS.

The operations relevant to MS-DOS are described in the section entitled "Creating The MS-DOS Partition When There Are Non DOS Partitions"

After setting up your fixed disk for MS-DOS only you may subsequently wish to use other operating systems. This means that you will have to partition the fixed disk. When you partition you destroy the information held on the fixed disk. You therefore need to back-up the MS-DOS files that are on the fixed disk using the BACKUP command, partition your fixed disk for all the operating systems you require, then restore the MS-DOS partition using the RESTORE command.

The MS-DOS command that you will use to set up your fixed disk is called the FDISK command. It uses a series of video displays and prompts that guide you through the operations step by step. The first example is based upon a 10 MB fixed disk, the second example is based on a 40 MB fixed disk and the third example is based on two 20 MB fixed disks. Different size fixed disks will result in different sizes shown on the display.

HARD DISK SYSTEMS

If you have 5 1/4 inch Diskettes...

Insert the MS-DOS Supplementary Diskette into the "A:" drive.

If you have 3 1/2 inch Diskettes...

Insert the MS-DOS System Diskette into the "A:" drive.

HOW TO USE THE ENTIRE FIXED DISK AS AN MS-DOS PARTITION

At the "A>" prompt:

1. Type:

FDISK
then press **ENTER**

The FDISK Options menu will then appear on the video display and will be similar to the following:

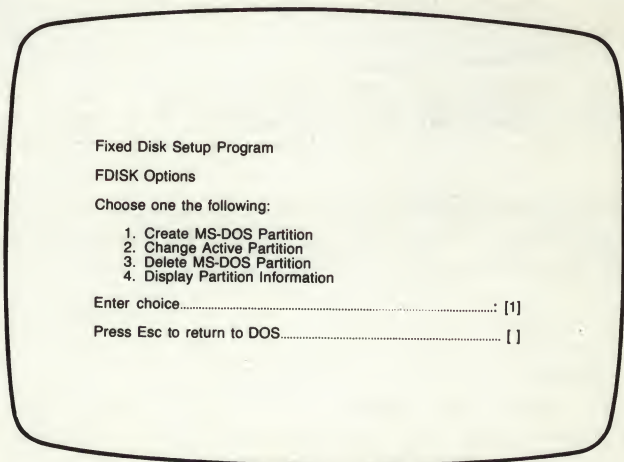


Fig. 5-1 FDISK Options Menu

2. Type:

1

then press **ENTER**

Assuming your fixed disk has not already been set up, a video display similar to the following will appear:

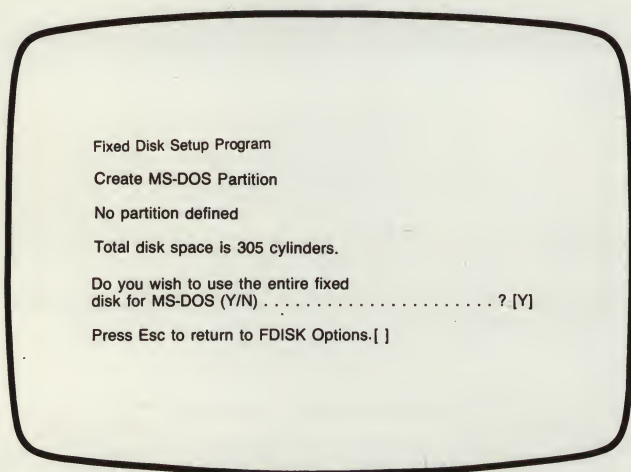


Fig. 5-2 Create MS-DOS Partition Prompt

If your fixed disk has already been set up, a different video display will appear. In this case refer to the section entitled "How To Partition Your Fixed Disk".

3. Type:

Y

then press **ENTER**

and the entire fixed disk will be assigned to MS-DOS. A video display similar to the following will appear:

HARD DISK SYSTEMS

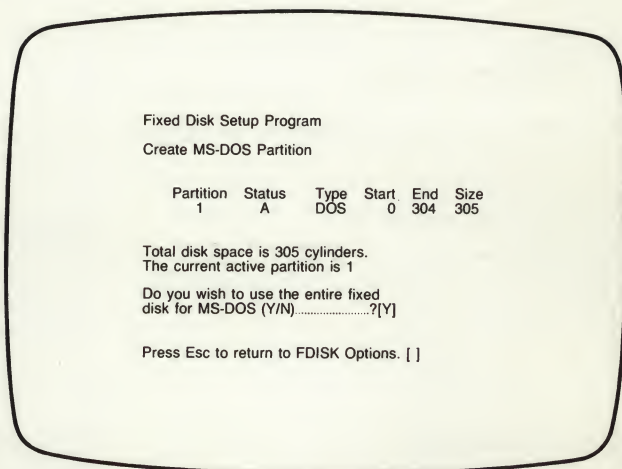


Fig. 5-3 MS-DOS Partition Created

4. Press **ESC**.
5. You should now have the display in Fig. 5-1. Press **ESC** to return to MS-DOS.

CREATING THE MS-DOS PARTITION WHEN THERE ARE NON DOS PARTITIONS

Each operating system that supports the fixed disk has a command that enables you to set up the partition that the particular operating system will use.

The FDISK command enables you to:

- Set up the MS-DOS partition to any size (up to 32MB and within the capacity of the fixed disk) and at any location on the fixed disk
- Change the partition that will be active when the system is rebooted
- Delete the MS-DOS partition
- Display the fixed disk partition map

To invoke the FDISK program at the "A>" prompt, type:

FDISK
then press **ENTER**

The FDISK Options menu will be displayed as follows:

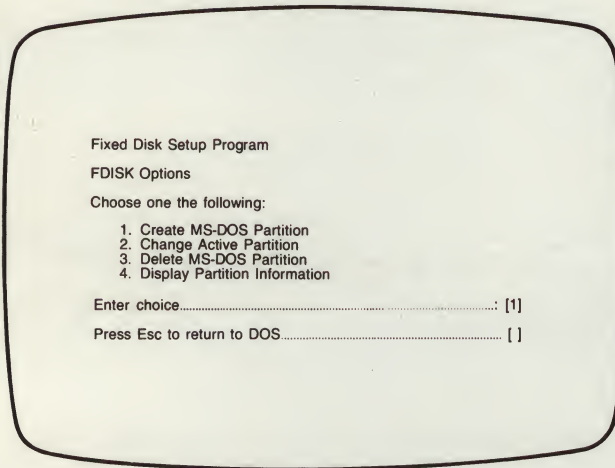


Fig. 5-4 FDISK Options Menu

Proceed by entering the number corresponding to the selection you require.

HOW TO CREATE THE MS-DOS PARTITION

1. Choose selection 1 from the FDISK Options menu by typing:

1
then press **ENTER**

2. If the fixed disk has already been set up, proceed to step 5.
3. If the fixed disk has not already been set up, the following display appears:

HARD DISK SYSTEMS

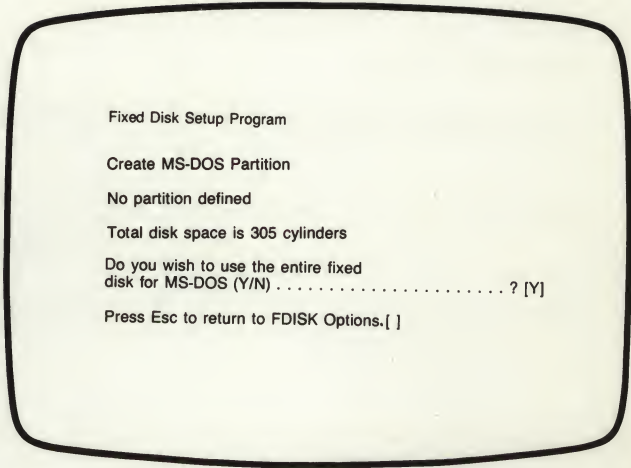


Fig. 5-5 Create MS-DOS Partition Prompt

4. Type:

N

then press **ENTER**

and a message similar to the following appears:

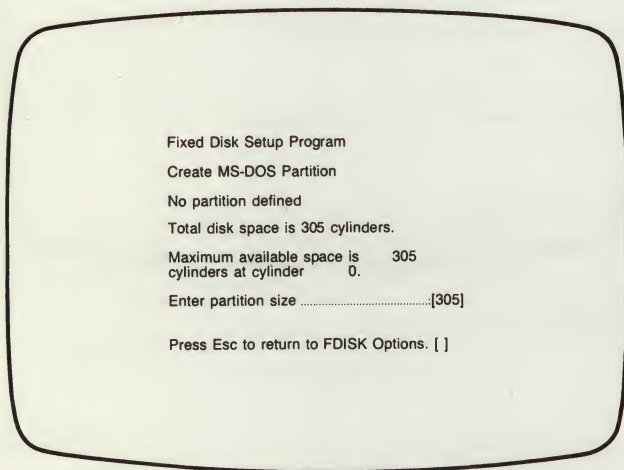


Fig. 5-6 Create MS-DOS Partition Display

This display shows the total number of cylinders available on your fixed disk. It also indicates the size and location of the largest number of contiguous cylinders available on the fixed disk. As there is nothing on the fixed disk, the number of contiguous cylinders available will be the same as the total fixed disk space. Proceed to step 6.

HARD DISK SYSTEMS

5. If your fixed disk has already been set up, a video display similar to the following will appear:

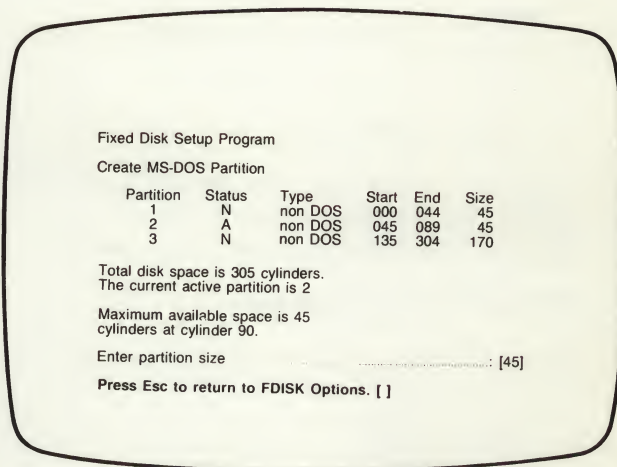


Fig. 5-7 Partition Status Display

The video display shown above illustrates a typical partition map of a fixed disk having three partitions.

The display shows for each partition:

- The status of the partition; that is, whether or not the operating system in that partition will be booted when the system is rebooted from the fixed disk. If so, it is designated the active partition (indicated by "A"), while the other partitions are not active (indicated by "N").
- Whether or not the partition is type DOS or non DOS.
- The beginning and end of the partition in terms of the first and last cylinder numbers.

- The size of the partition.
- The capacity of the fixed disk, and the largest available space for another partition and the cylinder number at which this space starts.

6. FDISK prompts you as follows:

Enter partition size.....:[xxxx]

The default value is the maximum available space. Type either **ENTER** alone to accept the default value, or type the number of cylinders you require, followed by **ENTER**.

You will then be prompted:

Enter starting cylinder number...:[xxxx]

7. The default value for the starting cylinder number depends on the partition size that you have just specified. It is the first cylinder of the smallest space on the fixed disk that is large enough for the partition. If this is where you want the MS-DOS partition to be, press **ENTER**. Otherwise you must enter the number of the cylinder that you wish to be the first MS-DOS cylinder, and then press **ENTER**. Your MS-DOS partition is now created.
8. Press **ESC** to return to the main FDISK options menu.
9. You now need to make the MS-DOS partition active.

HOW TO CHANGE THE ACTIVE PARTITION

The active partition contains the operating system that will be active whenever you bootstrap the system from the fixed disk.

1. Choose selection 2 from the FDISK Options menu by typing:

2
then press **ENTER**

HARD DISK SYSTEMS

A video display similar to the following will appear:

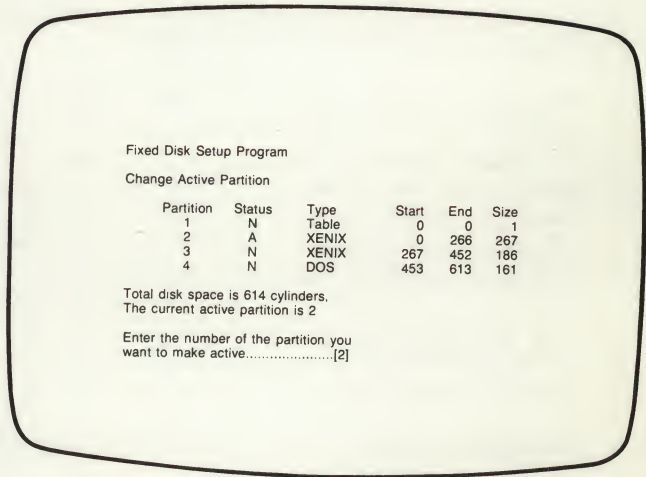


Fig. 5-8 Change Active Partition Prompt

2. Enter the number of the partition whose operating system you wish to make active. For example:

4

then press **ENTER**

in the example this makes the DOS operating system in partition 4 active. The operating system in partition 2 then becomes non-active.

3. Press **ESC** to return to the FDISK menu, then **ESC** again to return to MS-DOS.

In the example to make XENIX active again: make the "XENIX" partition 2 active.

4. You now need to install the MS-DOS System on the fixed disk. See the Section "Formatting Your Hard Disk" or the Section "Using SELECT To Install MS-DOS On Your Hard Disk".

HOW TO DELETE THE MS-DOS PARTITION

CAUTION: This option destroys the contents of the MS-DOS partition. Be sure to make a back-up of the MS-DOS partition using the BACKUP command before you continue.

1. If you wish to continue working with MS-DOS after deleting the MS-DOS partition, you must insert the MS-DOS system diskette in drive "A:" before proceeding. If you wish to continue working with some other operating system then you should either insert the system diskette of the appropriate operating system in drive "A:", or make the fixed disk partition of that operating system active before deleting the MS-DOS partition. For example to make XENIX active make the "XENIX" partition 2 active.
2. Choose selection 3 from the FDISK Options menu by typing:

3

then press **ENTER**

A video display similar to the following will appear:

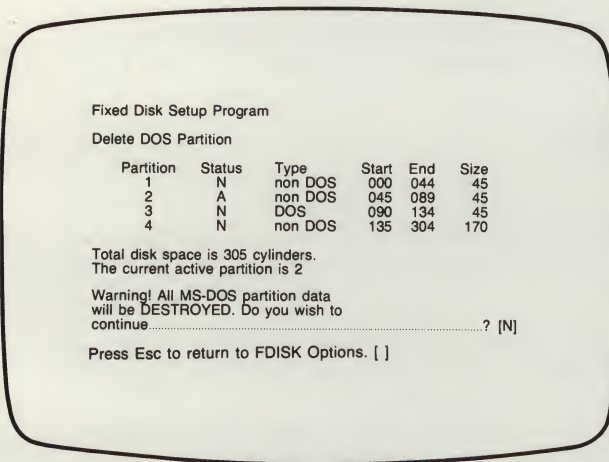


Fig. 5-9 Delete Partition Prompt

HARD DISK SYSTEMS

3. If you decide to cancel the operation press **ESC** and the FDISK Options menu will reappear. Conversely, if you have backed-up all your files and you wish to proceed with the deletion, type:

Y

then press **ENTER**

and the MS-DOS partition is deleted and the displayed partition map is updated.

4. Press **ESC** to return to FDISK options.

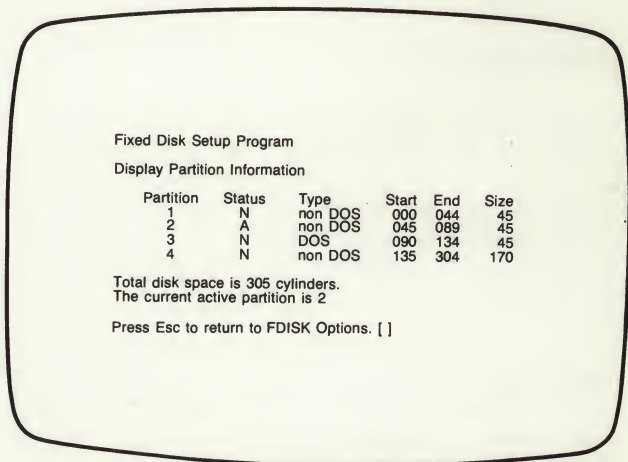
HOW TO DISPLAY THE FIXED DISK PARTITION MAP

If you type:

4

then press **ENTER**

from the FDISK Options menu, a fixed disk partition map similar to the following will be displayed:



Fixed Disk Setup Program						
Display Partition Information						
Partition	Status	Type	Start	End	Size	
1	N	non DOS	000	044	45	
2	A	non DOS	045	089	45	
3	N	DOS	090	134	45	
4	N	non DOS	135	304	170	

Total disk space is 305 cylinders.
The current active partition is 2

Press Esc to return to FDISK Options. []

Fig. 5-10 Partition Map

The video display shows a typical partition map of a fixed disk having four partitions.

The display shows for each set up partition

- The status of the partition; that is, whether or not that particular partition contains the operating system that will be booted when the system is rebooted from the fixed disk. If so, it is designated the active partition (indicated by "A"), while the other partitions are not active (indicated by "N").
- Whether or not the partition is type DOS or non DOS or XENIX (and Table).
- The beginning and end of the partition in terms of the first and last cylinder numbers.
- The size of the partition.

When you are ready to return to the FDISK Options menu, press ESC. Insert your MS-DOS System Disk into the "A:" drive and press ENTER.

FDISK: SETTING UP MULTIPLE PARTITIONS

INTRODUCTION

This software gives you the facility to have more than one MS-DOS partition on a fixed disk drive. You are permitted a maximum of four MS-DOS partitions on a fixed disk drive, each partition must not exceed 32 Mega Bytes. Each MS-DOS partition will be assigned different logical drive letters. For example for a single fixed disk drive system with four MS-DOS partitions, these partitions will appear to MS-DOS as drives "C:", "D:", "E:" and "F:".

In particular for physical fixed disks greater than 32MB, this gives you the facility to address the whole of such disks from MS-DOS. For example a 40MB fixed disk could be split into two equal partitions. The first partition of 20MB, drive "C:", could be used for software and be bootable. The second partition of 20MB, drive "D:" could be used for data only.

HARD DISK SYSTEMS

In a multitasking and/or networking environment, different logical drives can be assigned to different programs and/or users. So the ability to partition a fixed disk to appear as four logical drives is a very useful feature. Indeed access to logical drives can be controlled by password and protection status.

To summarize this new facility has the following advantages:

- On large capacity fixed disks, the ability to fully utilize the storage space over 32MB for MS-DOS access.
- To give greater organizational flexibility for MS-DOS programs and data, by being able to have different programs and data on different logical drives. However these logical drives are in fact different partitions of the same physical disk.
- For multitasking and networking, access to logical drives can be controlled. These logical drives could be in fact different MS-DOS partitions of the same physical disk.

HOW TO PREPARE THE FIXED DISK

Before you can use a fixed disk with MS-DOS, there are several steps you will need to take.

If MS-DOS will be the only operating system you will use, consider the size of your fixed disk. Decide how many partitions you want and the size of each partition. The maximum size of a MS-DOS partition is 32MB and the maximum number of partitions you are allowed is four.

Example

The figures illustrating the multiple partition of a fixed disk are based upon a fixed disk with an approximate formatted capacity of 42MB. There are 1048576 bytes in 1 Mega Byte (MB).

The fixed disk has 1023 cylinders. So each cylinder has an approximate capacity of:

$$42/1023 * 1048576 \text{ bytes.}$$

Which is approximately equal to:

$$43050 \text{ bytes.}$$

If there are 3 partitions of 255 cylinders, and one of 258. Each 255 cylinder partition will have approximately:

$$255 * 43050 / 1048576 \text{ MB.}$$

Which is approximately equal to:

$$10.5 \text{ MB.}$$

The 258 cylinder partition will have approximately:

$$258 * 43050 / 1048576 \text{ MB.}$$

Which is approximately equal to:

$$10.6 \text{ MB.}$$

You are recommended to carry out similar calculations for your own requirements.

HOW TO PARTITION YOUR FIXED DISK

Insert the diskette containing the "FDISK" program into the "A:" drive. At the "A>" prompt, type:

FDISK
then press **ENTER**

The computer will respond with the Fixed Disk Setup Program main menu:

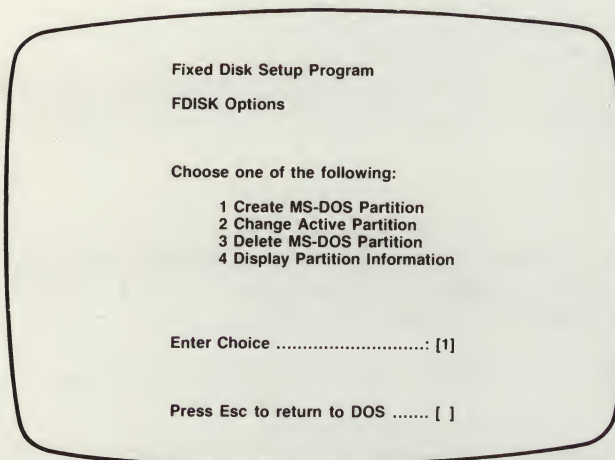


Fig. 5-11 FDISK Options Menu

PARTITIONING WITH NO MS-DOS PARTITIONS DEFINED

This method is to be preferred. If you have an existing MS-DOS partition use the BACKUP command to archive your existing MS-DOS directories and files, then delete the MS-DOS partition (see the Section "How to Delete the MS-DOS Partition"). If you have existing non-MS-DOS partition(s), these will be respected, but see the Section "Partitioning With Partitions Already Defined".

1. From the FDISK Main Options Menu, choose selection 1, by typing:

1
then press **ENTER**

A display similar to the following will appear:

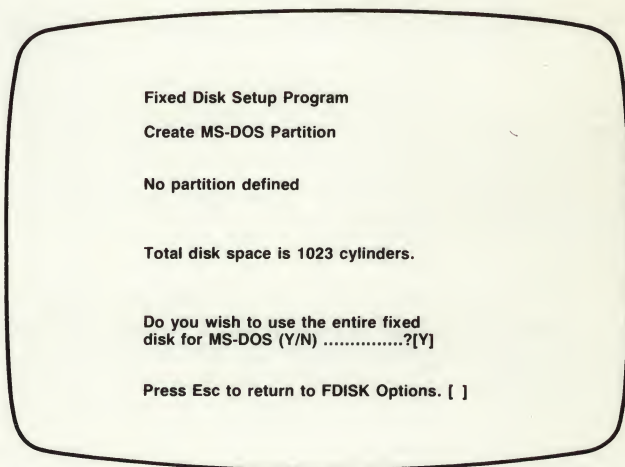


Fig. 5-12 Create MS-DOS Partition Prompt 1 For Multiple Partitions

2. Type:

N

then press **ENTER**

and a display similar to the following will appear:

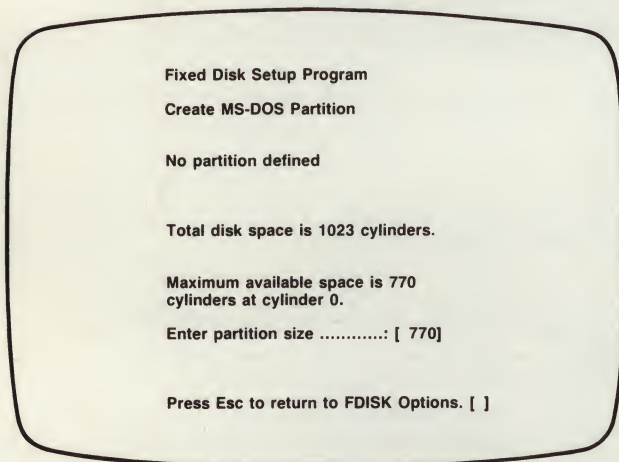


Fig. 5-13 Create MS-DOS Partition 1 For Multiple Partitions

This display shows the total number of cylinders belonging to the fixed disk. It shows as a default the largest number of cylinders available, which is less than 32MB (this maximum partition size is referred to as the value *boundary*). This is because MS-DOS can only directly address 32MB of the fixed disk.

In the example the required partition size is 255 cylinders. Type the number of cylinders you require in the first partition, then press **ENTER**.

3. In the example, the default starting cylinder number of 0 is the one chosen, if this is the cylinder number you require, simply press **ENTER**. Otherwise type the starting cylinder number then press **ENTER**.

The resulting display will look similar to the following:

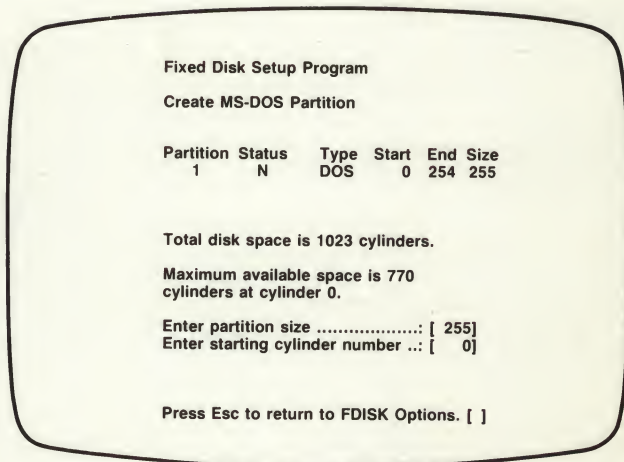


Fig. 5-14 Partition Status Display 1 For Multiple Partitions

4. Press **ESC** to return to the main FDISK options menu.

PARTITIONING WITH PARTITIONS ALREADY DEFINED

1. From the FDISK Main Options Menu choose selection 1 by typing:
1
then press **ENTER**

A display similar to the following will appear:

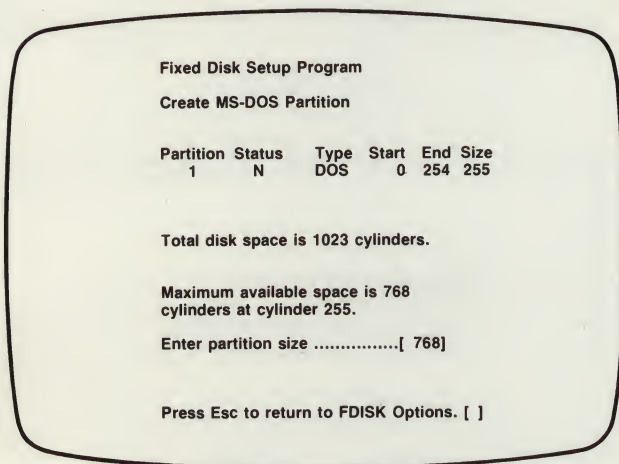


Fig. 5-15 Create MS-DOS Partition 2 For Multiple Partitions

2. In the example the required partition size is 255 cylinders. Type the number of cylinders you require in the second partition, then press **ENTER**.
3. In the example, the default starting cylinder number is the one chosen, if this is the starting cylinder number you require, simply press **ENTER**. Otherwise type the starting cylinder number, then press **ENTER**.

HARD DISK SYSTEMS

The resulting display will look similar to the following:

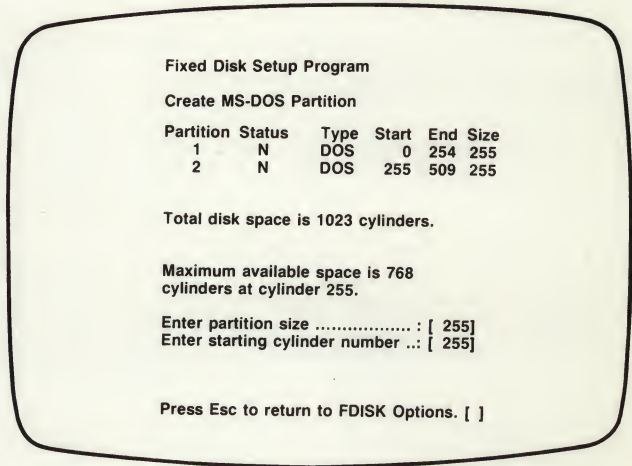


Fig. 5-16 Partition Status Display 2 For Multiple Partitions

4. Press **ESC** to return to the main FDISK options menu.
5. From the FDISK Main Options Menu choose selection 1 by typing:
1
then press **ENTER**

A display similar to the following will appear:

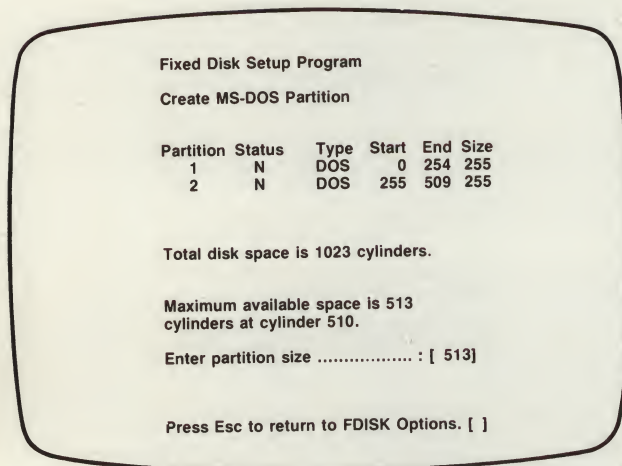


Fig. 5-17 Create MS-DOS Partition 3 For Multiple Partitions

6. In the example the required partition size is 255 cylinders. Type the number of cylinders you require in the third partition, then press **ENTER**.
7. In the example the default starting cylinder number is the one chosen, if this is the the cylinder number you require, simply press **ENTER**. Otherwise type the starting cylinder number then press **ENTER**.

HARD DISK SYSTEMS

The resulting display will look similar to the following:

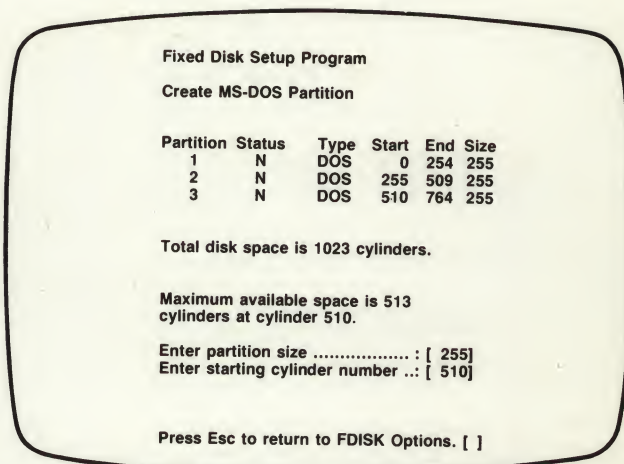


Fig. 5-18 Partition Status Display 3 For Multiple Partitions

8. Press **ESC** to return to the main FDISK options menu.
9. From the FDISK Main Options Menu choose selection 1 by typing:
1
then press **ENTER**

A display similar to the following will appear:

Fixed Disk Setup Program

Create MS-DOS Partition

Partition	Status	Type	Start	End	Size
1	N	DOS	0	254	255
2	N	DOS	255	509	255
3	N	DOS	510	764	255

Total disk space is 1023 cylinders.

Maximum available space is 258 cylinders at cylinder 765.

Enter partition size : [258]

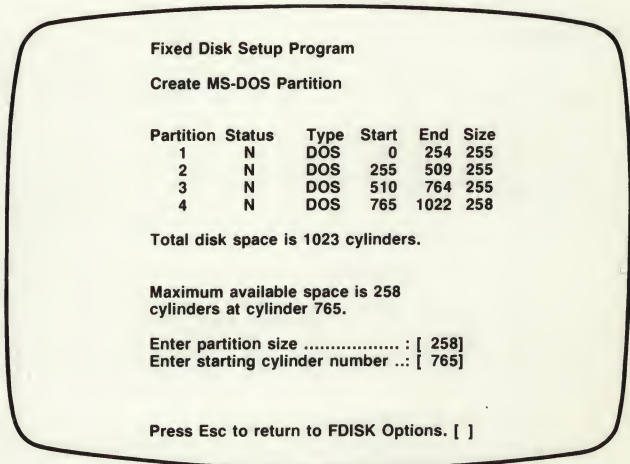
Press Esc to return to FDISK Options. []

Fig. 5-19 Create MS-DOS Partition 4 For Multiple Partitions

10. In the example the required partition size is the default of 258, because the partition consists of all the remaining cylinders. Type the number of cylinders you require in the fourth partition, then press **ENTER**.

HARD DISK SYSTEMS

The resulting display will look similar to the following:



Fixed Disk Setup Program

Create MS-DOS Partition

Partition	Status	Type	Start	End	Size
1	N	DOS	0	254	255
2	N	DOS	255	509	255
3	N	DOS	510	764	255
4	N	DOS	765	1022	258

Total disk space is 1023 cylinders.

Maximum available space is 258 cylinders at cylinder 765.

Enter partition size : [258]
Enter starting cylinder number ... : [765]

Press Esc to return to FDISK Options. []

Fig. 5-20 Partition Status Display 4 For Multiple Partitions

11. Press **ESC** to return to the main FDISK options menu.

HOW TO CHANGE THE ACTIVE PARTITION

The active partition contains the operating system program files that will enable the computer to bootstrap.

Note

If you have two fixed disk drives, this information is only relevant to the First Fixed Disk. For more information see the following Section "FDISK For Two Fixed Disk Drives".

1. Choose selection 2 from the FDISK Mains Options menu by typing:

2
then press **ENTER**

A video display similar to the following will appear:

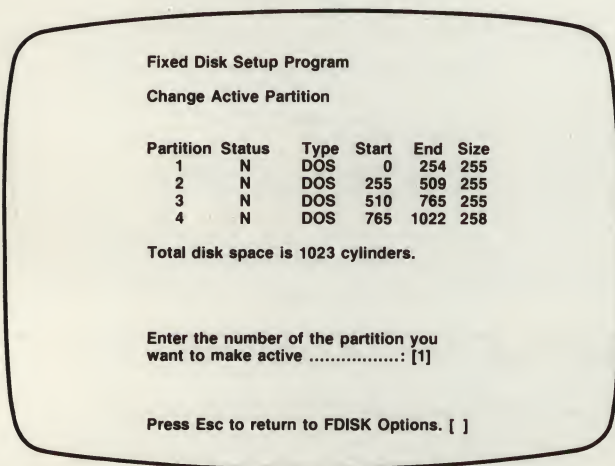


Fig. 5-21 Change Active Partition Prompt For Multiple Partitions

2. Enter the number of the partition which will contain the MS-DOS Operating System Programs. It must be the first MS-DOS partition. In the example this is partition 1. Type the number of the first MS-DOS partition. In the example type:

1
then press **ENTER**

HARD DISK SYSTEMS

This makes the chosen partition active:

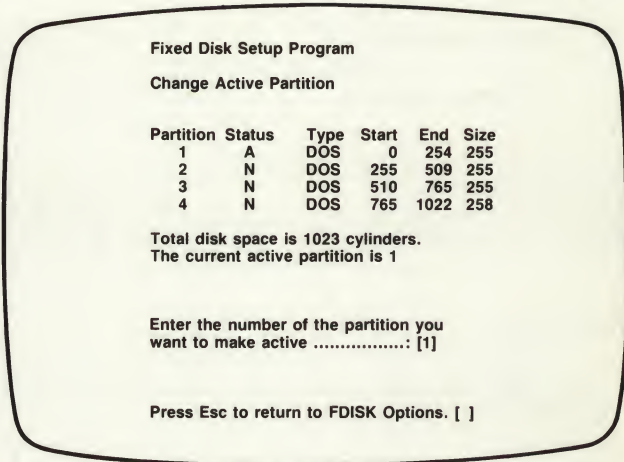


Fig. 5-22 Active Partition Status Display For Multiple Partitions

3. Press **ESC** to return to the main FDISK options menu.
4. Press **ESC** to again to return to MS-DOS.

The following message then appears:

**An MS-DOS partition has been changed.
A system reset will occur to update MS-DOS**

**Insert MS-DOS diskette in drive A.
Press ENTER when ready.....: []**

5. Do as the message instructs with your MS-DOS System diskette in drive "A:".

If you have four MS-DOS partitions, with only one fixed disk drive, the following status message will appear, after the system has bootstrapped:

**Drive D Installed
Drive E Installed
Drive F Installed**

The active partition is "C:". The other partitions are in ascending order of partition numbers: "D:", "E:", and "F:". If there are less partitions, there would be fewer drive letters shown in the disk status report.

Warning

**ONLY USE MS-DOS SYSTEM RELEASES WHICH SUPPORT
OLIVETTI ENHANCED DISK INSTALLATION.**

Bootstrapping old or non-Olivetti releases may corrupt information in MS-DOS partitions. In particular this corruption will occur, if your first MS-DOS partition crosses or is outside the 32MB boundary of the fixed disk.

FDISK FOR TWO FIXED DISK DRIVES

INTRODUCTION

If your Olivetti Personal Computer has two fixed disk drives, there are several steps you will need to take before you can use them with MS-DOS.

The MS-DOS command you will use to set up your fixed disks is called the FDISK command. It uses a series of video displays and prompts that guide you through the operations step by step. The example used is based on two 20MB hard disks. Different sized disks will result in different sizes shown on the display.

HARD DISK SYSTEMS

Insert the diskette containing the "FDISK" program into the "A:" drive. At the "A>" prompt, type:

FDISK
then press **ENTER**

The FDISK Options menu will then appear on the video display, as shown in the following figure:

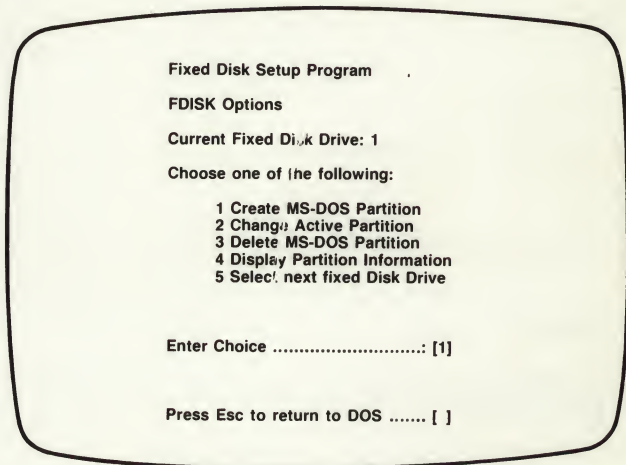


Fig. 5-23 FDISK Options Menu For Disk Drive 1

The current fixed disk drive is 1. Option 5 enables you to select the next fixed disk drive. Type:

5
then press **ENTER**

The FDISK Options menu will then appear on the video display, as shown in the following figure:

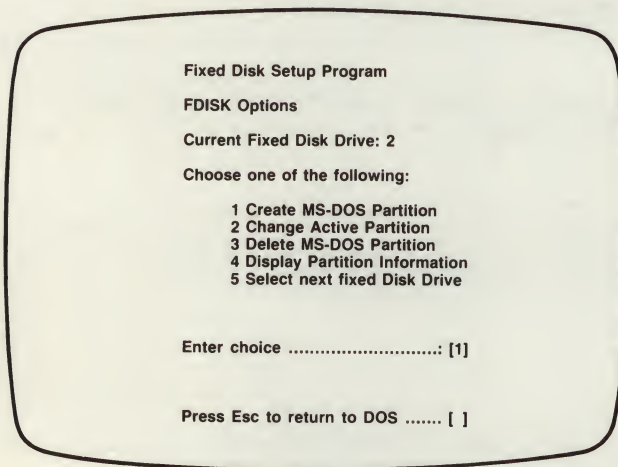


Fig. 5-24 FDISK Options Menu For Disk Drive 2

Note that the current fixed disk drive is 2. To select fixed disk drive 1 again. Type:

5
then press **ENTER**

The FDISK Options menu will then appear on the video display, as shown in Figure "FDISK Options Menu For Disk Drive 1"

All the FDISK options can be applied to the selected fixed disk drive; 1 or 2. If you only require one MS-DOS partition per fixed disk drive, turn back to the previous Section "How To Use The Entire Fixed Disk As An MS-DOS Partition" If you require more than one MS-DOS partition for one or both of your fixed disk drives, follow the instructions in the Section "FDISK: Setting Up Multiple Partitions".

HARD DISK SYSTEMS

DRIVE LETTER ASSIGNMENTS

If you have only one MS-DOS partition per fixed disk, then physical drive 1 will appear to MS-DOS as drive "C:" and physical drive 2 will appear to MS-DOS as drive "D:".

If you have more than one MS-DOS partition on physical drive 1 and/or physical drive 2 read the following table. It shows the relationships between MS-DOS drive letters and the number of MS-DOS partitions on each physical drive.

		No. of Partitions in Physical Drive 2			
		0,1	2	3	4
No. of Partitions in Physical Drive 1	0,1	C - - - D - - -	C - - - D E - -	C - - - D E F -	C - - - D E F G
	2	C E - - D - - -	C E - - D F - -	C E - - D F G -	C E - - D F G H
	3	C E F - D - - -	C E F - D G - -	C E F - D G H -	C E F - D G H I
	4	C E F G D - - -	C E F G D H - -	C E F G D H I -	C E F G D H I J

Tab. 5-25 Multiple Partition Drive Letter Assignments

Example

Physical disk 1 has three MS-DOS partitions.
Physical disk 2 has two MS-DOS partitions.

For the first fixed disk, the first partition will appear to MS-DOS as drive "C:", the second partition will be "E:", the third partition will be drive "F:" and the fourth partition will be "G:". For the second physical disk, the first partition will appear to MS-DOS as drive "D:", the second partition will be drive "H:".

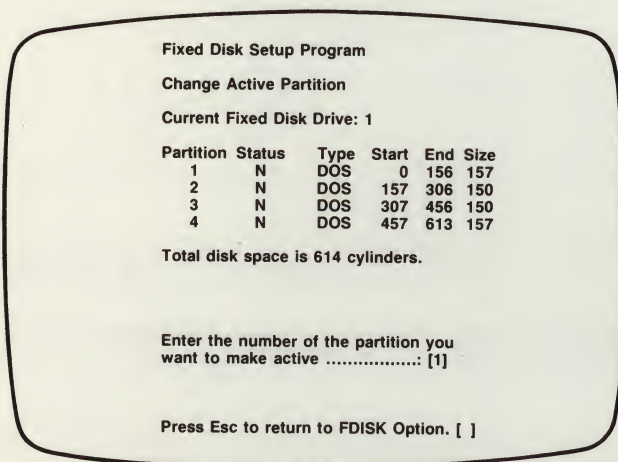
MAKING YOUR FIXED DISK BOOTABLE

Only the lowest partition numbered MS-DOS partition of Physical Disk 1 can be made bootable with an MS-DOS System. This is drive "C:" (the lowest letter assigned to a fixed disk). If there are multiple partitions, on Physical Disk 1, then the MS-DOS partition with the lowest partition number must be made active using Option 2 on the main menu of FDISK.

With the video screen showing the display illustrated in the Figure "FDISK Options Menu For Disk Drive 1", type:

2
then press **ENTER**

A display similar to the following will appear:



```
Fixed Disk Setup Program
Change Active Partition
Current Fixed Disk Drive: 1

Partition Status Type Start End Size
1 N DOS 0 156 157
2 N DOS 157 306 150
3 N DOS 307 456 150
4 N DOS 457 613 157

Total disk space is 614 cylinders.

Enter the number of the partition you
want to make active .....: [1]

Press Esc to return to FDISK Option. [ ]
```

Fig. 5-26 FDISK Change Active Partition Screen

Type in the number of the lowest MS-DOS partition; for the example previously described, type:

1
then press **ENTER**

HARD DISK SYSTEMS

The display will then change to the following:

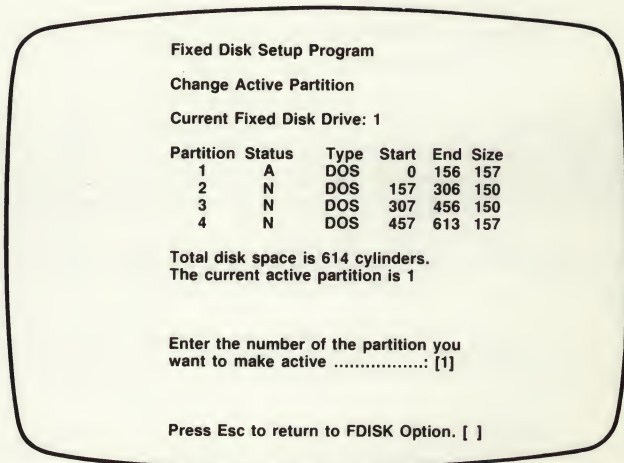


Fig. 5-27 FDISK Active Partition Screen

Press **ESC** to return to the FDISK main menu.
Press **ESC** to return to MS-DOS.

The following message will then appear:

**An MS-DOS partition has been changed.
A system reset will occur to update MS-DOS**

**Insert MS-DOS diskette A.
Press ENTER when ready.....[]**

Do as the message instructs.

An output similar to the following will be displayed on the screen:

**Drive E Installed
Drive F Installed
Drive G Installed
Drive H Installed**

This example illustrates four MS-DOS partitions on Physical Fixed Disk 1 and two MS-DOS partition on Physical Disk 2. The active partition is "C:". The other MS-DOS partitions of Fixed Disk 1 are "E:", "F:", and "G:". The MS-DOS partitions of Fixed Disk 2 are "D" and "H:".

It is recommended that you give each logical drive a volume label such as:

LABEL	DRIVE
D(1) P(1)	C:
D(2) P(1)	D:
D(1) P(2)	E:
D(1) P(3)	F:
D(1) P(4)	G:
D(2) P(2)	H:

These suggested volume labels are for the example illustrated, similar labeling schemes would apply to other configurations.

FORMATTING YOUR HARD DISK

If you have a Non USA Keyboard...

You are recommended to use the SELECT command to format and install the operating system on your "C:" drive. Read the Section later in this Chapter called "Using SELECT" To Install MS-DOS On Your Hard Disk".

If you have a USA Keyboard

You can either use the SELECT command or use the FORMAT command to format the "C:" drive and install the MS-DOS operating system.

HARD DISK SYSTEMS

If you have Multiple MS-DOS Partitions or Two Hard Disks

Use the **FORMAT** command to format drives other than "C:" without an operating system.

FORMATTING THE C: DRIVE

1. You now need to format the hard disk so that MS-DOS can use it. Make sure that you have your System disk in drive "A:" and "A>" is your MS-DOS prompt. Type:

```
FORMAT C:/S/V  
then press ENTER
```

This not only formats the hard disk but also copies the hidden files and **COMMAND.COM** to it.

If you do not want to boot MS-DOS from hard disk it is sufficient to type

```
FORMAT C:/V  
then press ENTER
```

If you have an existing formatted disk as a precautionary measure you will be prompted:

Enter current Volume Label for drive C:

Type in your current label.

You will then be prompted:

**WARNING, ALL DATA ON NON-REMOVABLE DISK
DRIVE C: WILL BE LOST!
Proceed with Format (Y/N)?**

2. Type **Y** then press **ENTER**

Formatting

appears. The FORMAT program displays the cylinder and head number it is formatting. After several minutes you will see the message:

Format complete

and if you entered **/S** in the command line the following message will also appear:

System transferred

This indicates that a copy of MS-DOS has been made on the hard disk. You will now be able to boot from the hard disk.

3. The following message then appears:

Volume label (11 characters, ENTER for none) ?

It is recommended that you give your hard disk a Volume label, for example type:

HARD DISK
then press **ENTER**

You will get a message similar to the following:

10592256 bytes total disk space
61440 bytes used by system
10530816 bytes available on disk

FORMATTING HARD DISKS DRIVES OTHER THAN C:

To format the other logical drives, at the "A>" prompt, type:

FORMAT drive IV
then press **ENTER**

Where

drive can be the other logical drives you have partitioned.

HARD DISK SYSTEMS

It is recommended that you give each logical drive a volume label, such as:

LABEL	DRIVE
D(1) P(1)	C:
D(1) P(2)	D:
D(1) P(3)	E:
D(1) P(4)	F:

TRANSFERRING THE OPERATING SYSTEM TO HARD DISK

If you have copied MS-DOS to the hard disk you will probably require the MS-DOS external commands to be copied there as well. With your MS-DOS system diskette in drive "A:", at the "A>" prompt, type:

```
COPY *.* C:/V  
then press ENTER
```

This will copy all the non-hidden files from the system diskette to the hard disk, verifying the correctness of the copied files.

USING SELECT TO INSTALL MS-DOS ON YOUR HARD DISK

The SELECT command automates the preparation of a system disk, including preparing a AUTOEXEC.BAT and CONFIG.SYS for you. However you will still need to add commands to AUTOEXEC.BAT and CONFIG.SYS, so also see Chapter 6 "Configuring And Initializing MS-DOS".

Before you enter this command you will need to know your *country-code* and *keyboard-code*. See the Section "The SELECT Command" in Chapter 3 for a table of these codes.

Bootstrap the computer with the Master System Disk in the "A>" drive. At the "A>" prompt, type:

```
SELECT C: country-code keyboard-code  
then press ENTER
```

The computer responds:

**SELECT is used to install DOS the first time. SELECT erases everything on the specified target and then installs DOS.
Do you wish to continue (Y/N)? Y**

If you wish to proceed press **ENTER**, otherwise type **N**, then press **ENTER**. SELECT then asks a question similar to the following:

Is KEYBIT.COM on another diskette (Y/N)?

As the Keyboard Drivers Diskette is separate from the System Diskette, answer **Y** to this question. SELECT will now use the **FORMAT** command to format the **C:** drive of the hard disk. If you have an existing formatted disk as a precautionary measure you will be prompted:

Enter current Volume Label for drive C:

Type in your current label.

You will then be prompted

**WARNING, ALL DATA ON NON-REMOVABLE DISK
DRIVE C: WILL BE LOST!
Proceed with Format (Y/N)?**

Press **Y** in reply. The "**C:**" drive of your hard disk will then be formatted.

You will then be prompted to insert the Keyboard Drivers Diskette into the **A:** drive. For example:

**Insert KEYBIT.COM diskette in drive A:
Strike any key when ready**

Press any typing key. The computer will then copy the keyboard driver to the target diskette. You will then be prompted to replace your system disk. All the files on the system disk will be copied to the target disk.

HARD DISK SYSTEMS

If you have 5 1/4 inch Diskettes...

Insert the MS-DOS Supplementary Diskette into the "A:" drive. At the "A>" prompt, type:

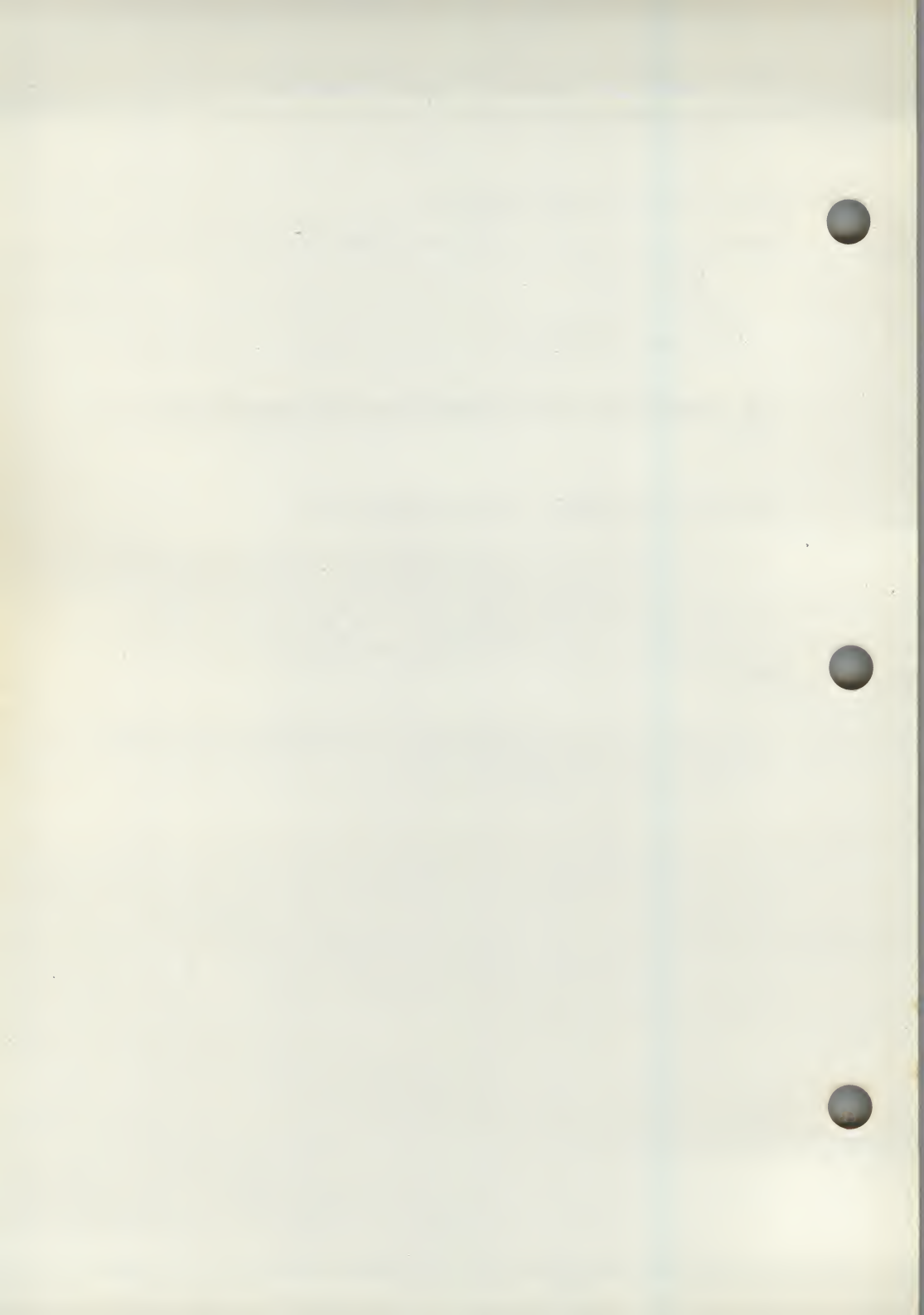
COPY *.* C: /V
then press ENTER

The computer will then copy all the files on the diskette to the "C:" drive.

BOOTSTRAPPING YOUR COMPUTER

If you have set up the "C:" drive as active and have installed the MS-DOS operating System, test your installation by bootstrapping your hard disk. Remove any diskette that is in the "A" drive. Press the following keys all at the same time: **CTRL ALT DEL**. The computer should bootstrap with the Microsoft/Olivetti Copyright Notice, and output a "C>" prompt.

If this does not work, start again at the beginning to repartition and format your hard disk. If again the computer bootstrap does not work, contact your Olivetti Dealer for advice.



6. CONFIGURING AND INITIALIZING MS-DOS

ABOUT THIS CHAPTER

This chapter contains example listings of CONFIG.SYS and AUTOEXEC.BAT files. The intention is to show you how to improve the performance of your computer. If you have 3 1/2 inch disk drives, pay particular attention to the DRIVPARM example CONFIG.SYS files.

CONTENTS

INTRODUCTION 6-1

**THE CONFIGURATION
OF MS-DOS USING
CONFIG.SYS** 6-1

**FLOPPY DISK
CONFIG.SYS** 6-1

**HARD DISK
CONFIG.SYS** 6-2

**THE INITIALIZATION
OF MS-DOS USING
AN AUTOEXEC.BAT
FILE** 6-3

**USING THE
AUTOEXEC.BAT TO
LOAD APPLICATIONS** 6-4

CONFIGURING AND INITIALIZING MS-DOS

INTRODUCTION

This Chapter contains example CONFIG.SYS and AUTOEXEC.BAT files. Look for the Section heading suitable for your particular hardware configuration. Remember these are only example files, tailor them to your own hardware and application requirements.

THE CONFIGURATION OF MS-DOS USING CONFIG.SYS

Whenever MS-DOS is initialized, it searches the root directory of the "A:" drive (or "C:" drive, for a hard disk), for a file named CONFIG.SYS. If this file exists, it is read and the configuring commands within it are executed. If CONFIG.SYS is not found the default settings for each command are used. In many cases these defaults do not provide optimum performance. So by providing the correct parameter settings, the performance of your application program and/or MS-DOS can be improved. However the trade-off is in many cases increased use of main memory, leaving less room for application programs. For more information about individual CONFIG.SYS commands see Appendix C in the "MS-DOS User Guide".

Use the "Video File Editor" (EDIT), to create and/or edit the CONFIG.SYS file. Remember it must be in the root directory of the boot drive. Insert the correct configuring commands for your hardware configuration. The "Video File Editor (EDIT)" is documented in Chapter 6 of the "MS-DOS User Guide".

After creating or changing CONFIG.SYS, you must re-bootstrap the computer to effect the new commands.

FLOPPY DISK CONFIG.SYS

If you have 5 1/4 inch floppy disk drive(s)...

BUFFERS = 8
FILES = 20

If you have two 3 1/2 inch floppy disk drives A: and B:...

BUFFERS = 8
DRIVPARM = /D:0 /F:2
DRIVPARM = /D:1 /F:2
FILES = 20

If you have a 3 1/2 inch floppy drive A:...

BUFFERS = 8
DRIVPARM = /D:0 /F:2
FILES = 20

If you have a 3 1/2 inch floppy drive B:...

BUFFERS = 8
DRIVPARM = /D:1 /F:2
FILES = 20

HARD DISK CONFIG.SYS

If you have 3 1/2 inch floppy disk drive(s) and hard disk(s)...

See above for the relevant "DRIVPARM" setting, but use the "BUFFERS" and "FILES" settings recommended below.

If you have a 10 MB hard disk...

BUFFERS = 15
FILES = 20

If you have a 20 MB hard disk...

BUFFERS = 25
FILES = 20

CONFIGURING AND INITIALIZING MS-DOS

If you have a 40 or 70 MB hard disk...

BUFFERS = 40

FILES = 20

THE INITIALIZATION OF MS-DOS USING AN AUTOEXEC.BAT FILE

The AUTOEXEC.BAT is a special batch file which, if present in the root directory of the "A:" drive (or "C:" drive, for a hard disk), is automatically executed at system initialization. It is very useful to have a fixed sequence of commands executed every time the system is initialized. The difference between the CONFIG.SYS and the AUTOEXEC.BAT file is that the special declaration commands in the CONFIG.SYS can only be executed at system initialization, whereas the AUTOEXEC.BAT contains normal MS-DOS commands, which can be executed at any time during an MS-DOS session. The CONFIG.SYS is executed before AUTOEXEC.BAT.

Use the "Video File Editor (EDIT)", to create and/or edit the AUTOEXEC.BAT file. Remember it must be in the root directory of the boot drive. Insert commands which configure your system and install your applications. The "Video File Editor (EDIT)" is documented in Chapter 6 of the "MS-DOS User Guide".

The following MS-DOS commands are particularly relevant for inclusion in the "AUTOEXEC.BAT" file:

- ASSIGN
- DATE
- GRAFTABL
- GRAPHICS
- JOIN
- KEYBxx
- MODE

- PATH
- PROMPT
- SHARE
- SUBST
- TIME

See Chapter 5 of the "MS-DOS User Guide" for more details and examples of the use of the above commands.

If you have a floppy disk based system...

```
ECHO OFF
GRAFTABL
PATH = A:\;B:\
PROMPT = $P$G
CLS
```

If you have a hard disk based system...

```
ECHO OFF
GRAFTABL
PATH = C:\;A:\;B:\
PROMPT = $P$G
CLS
```

USING THE AUTOEXEC.BAT TO LOAD APPLICATIONS

Usually the application documentation gives full details and examples of using batch files to initialize and call an application. However many "pop-up programs", which load and stay resident, are sensitive to the order in which they are initially called. Make sure that all resident MS-DOS external commands such as "GRAPHICS", "GRAFTABL" and "MODE" are called before calling the "pop-up program".

A. KEYBOARD LAYOUTS

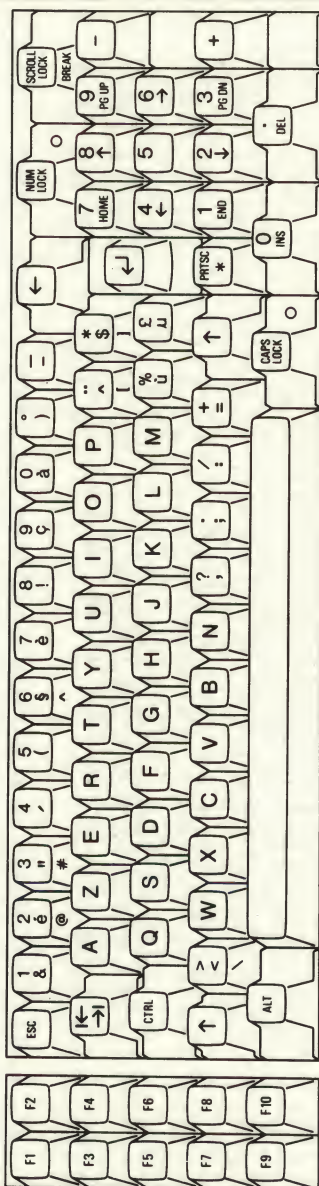
ABOUT THIS APPENDIX

This appendix contains figures showing the layout of all the Olivetti Personal Computer Keyboards.

Fig. A-1 Denmark Industry Compatible 83 Key Keyboard



Fig. A-3 France Industry Compatible 83 Key Keyboard



KEYBOARD LAYOUTS

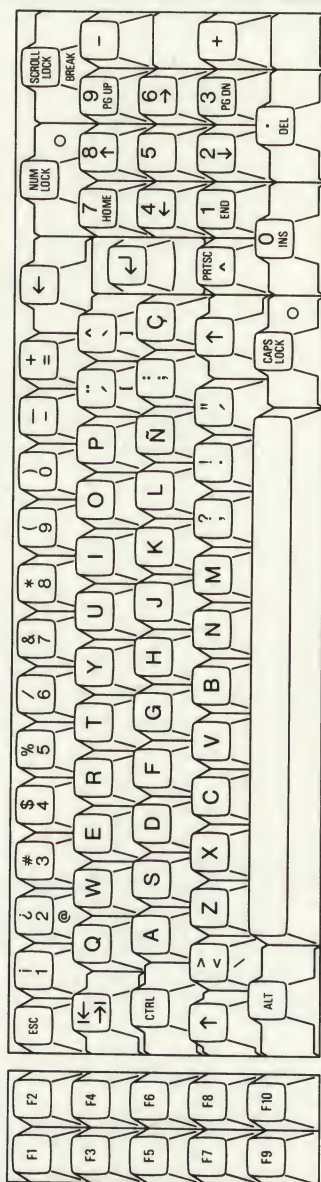


Fig. A-7 Spain International Industry Compatible 83 Key Keyboard

KEYBOARD LAYOUTS

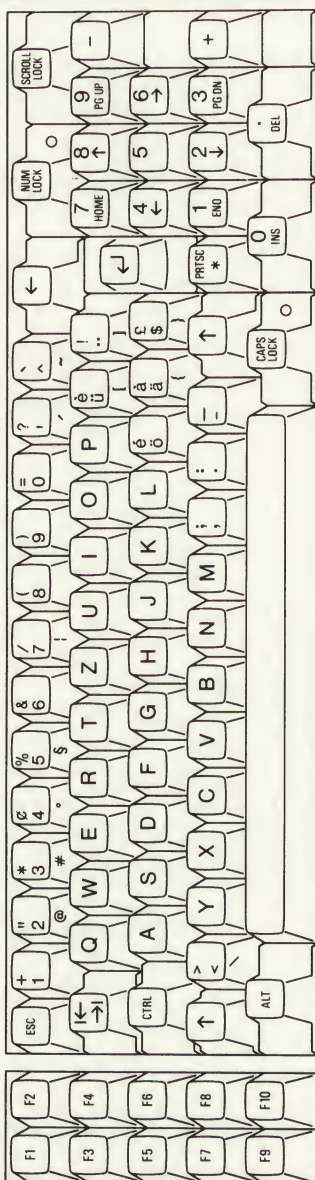


Fig. A-9 Swiss German Industry Compatible 83 Key Keyboard

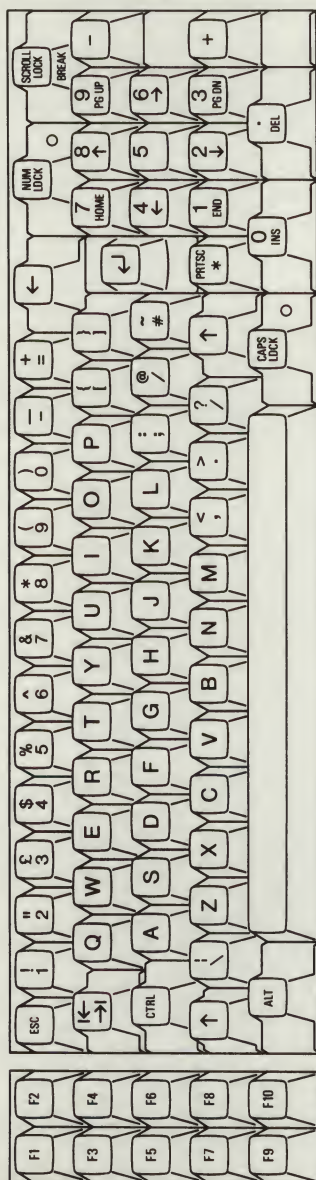


Fig. A-10 United Kingdom Industry Compatible 83 Key Keyboard

KEYBOARD LAYOUTS

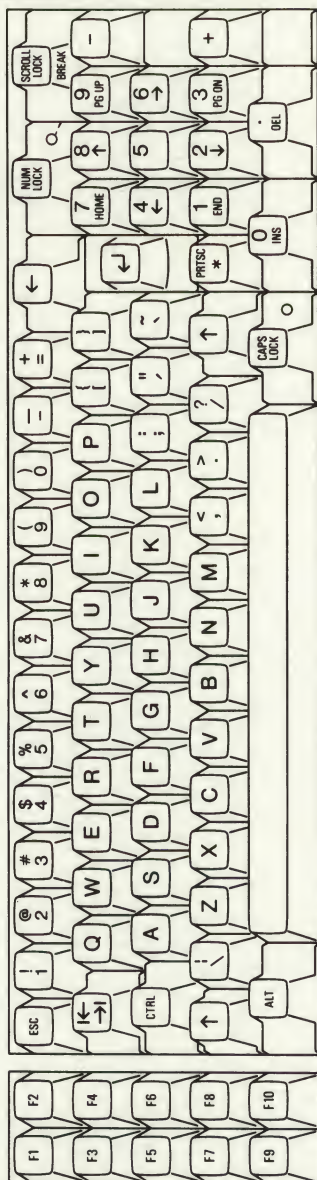


Fig. A-11 USA Industry Compatible 83 Key Keyboard

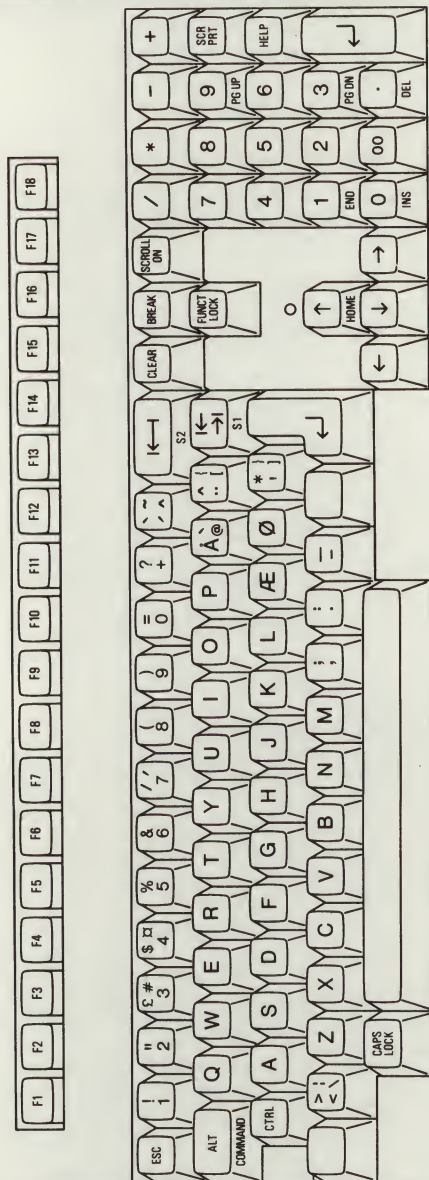


Fig. A-12 Denmark Olivetti Extended 102 Key Keyboard

KEYBOARD LAYOUTS

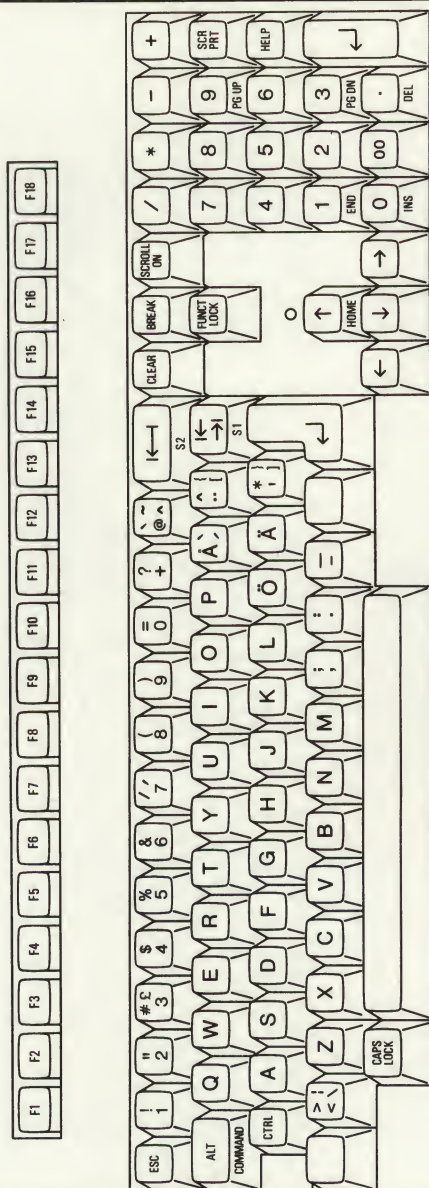


Fig. A-13 Finland Sweden Olivetti Extended 102 Key Keyboard

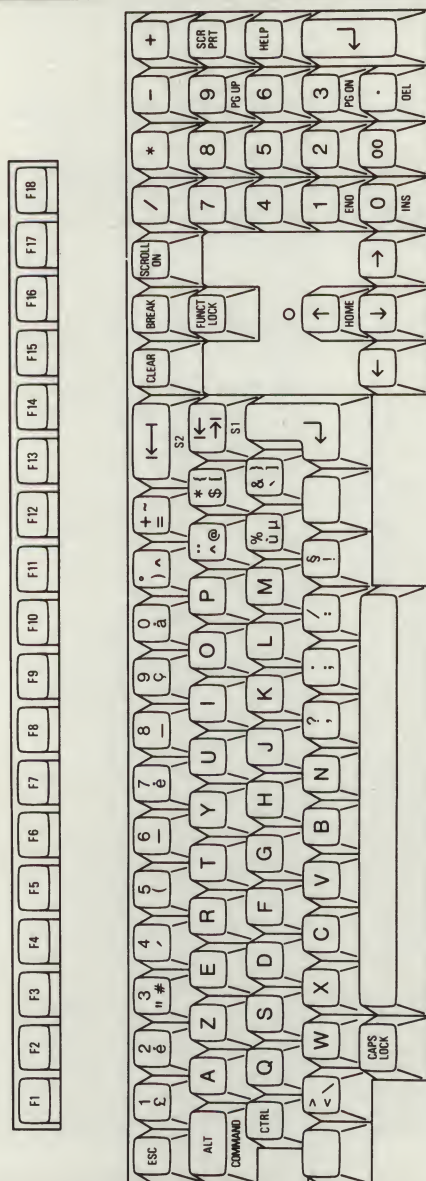
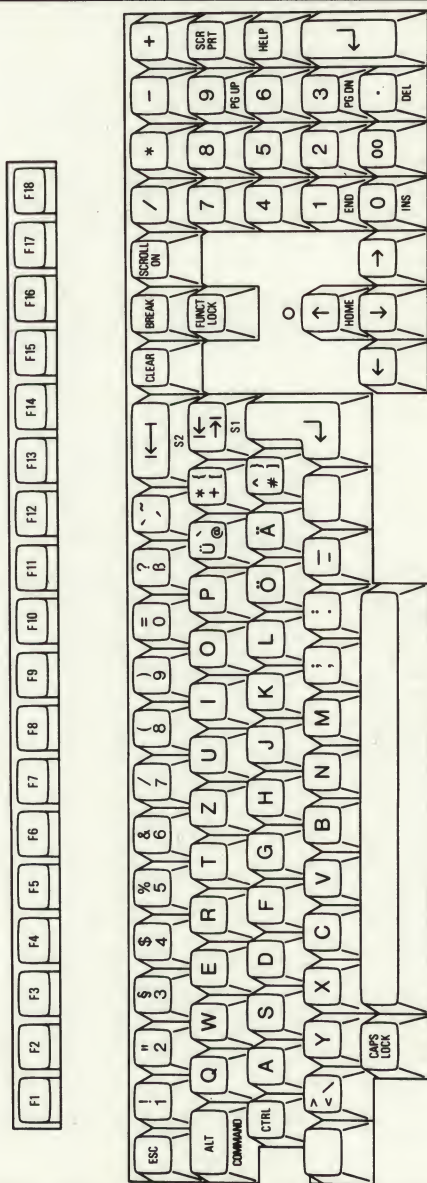


Fig. A-14 France Olivetti Extended 102 Key Keyboard

Fig. A-15 Germany Olivetti Extended 102 Key Keyboard



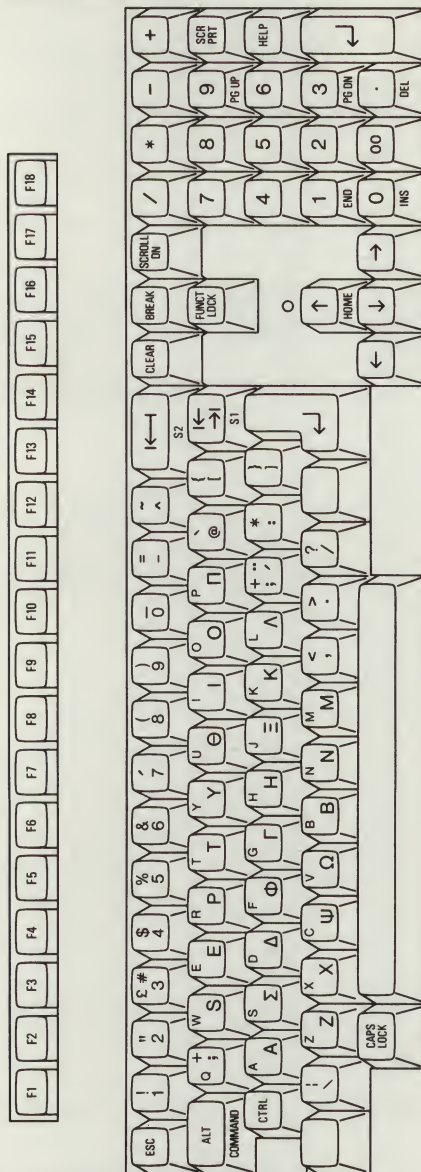


Fig. A-16 Greece Olivetti Extended 102 Key Keyboard

KEYBOARD LAYOUTS

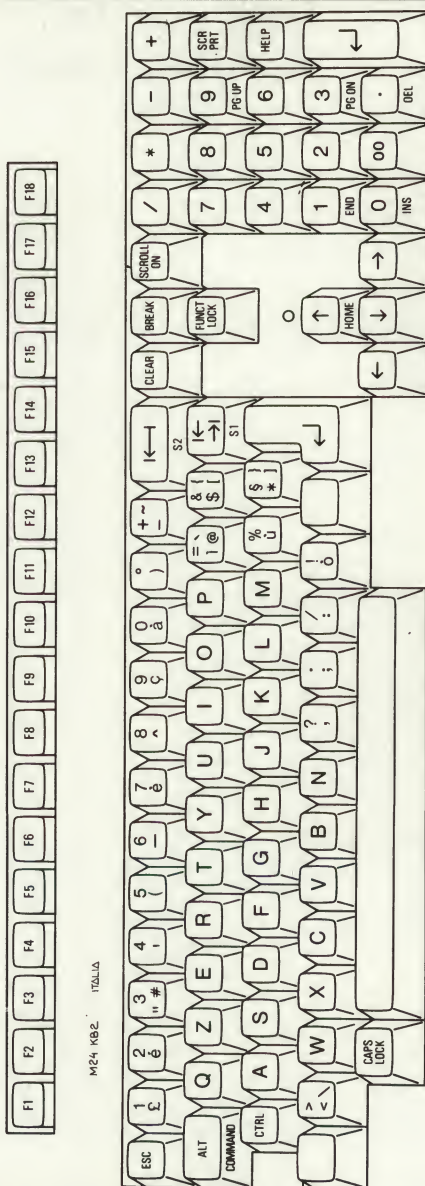


Fig. A-17 Italy Olivetti Extended 102 Key Keyboard

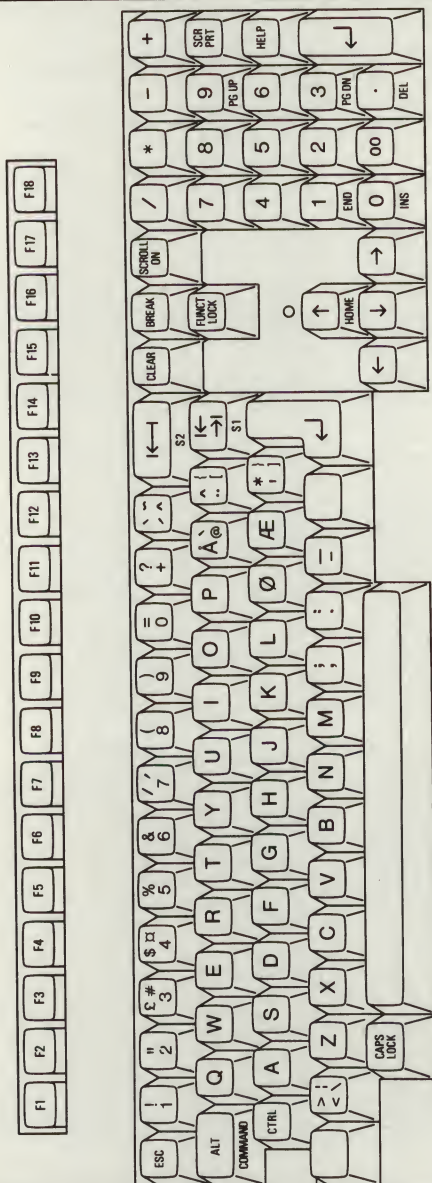
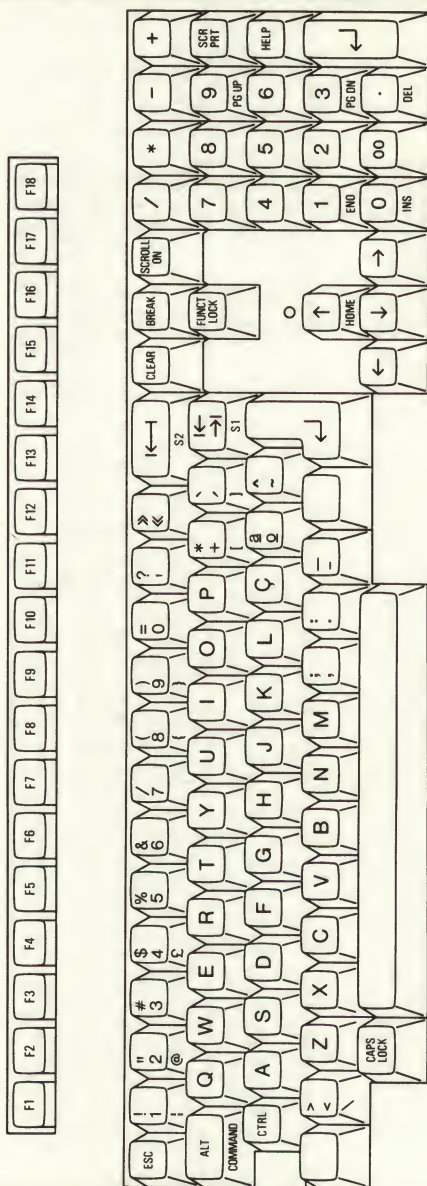


Fig. A-18 Norway Olivetti Extended 102 Key Keyboard

Fig. A-19 Portugal Olivetti Extended 102 Key Keyboard



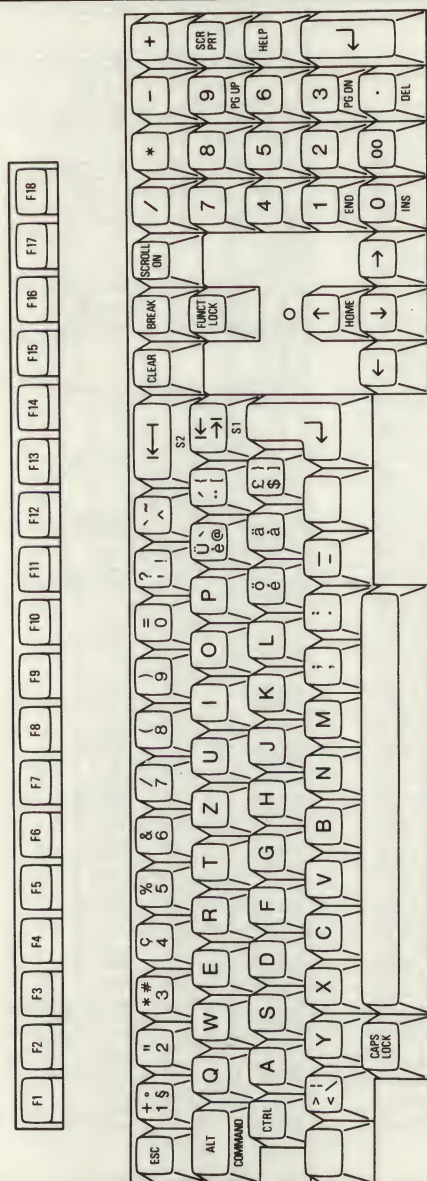


Fig. A-22 Swiss French Olivetti Extended 102 Key Keyboard

Fig. A-23 Swiss German Olivetti Extended 102 Key Keyboard



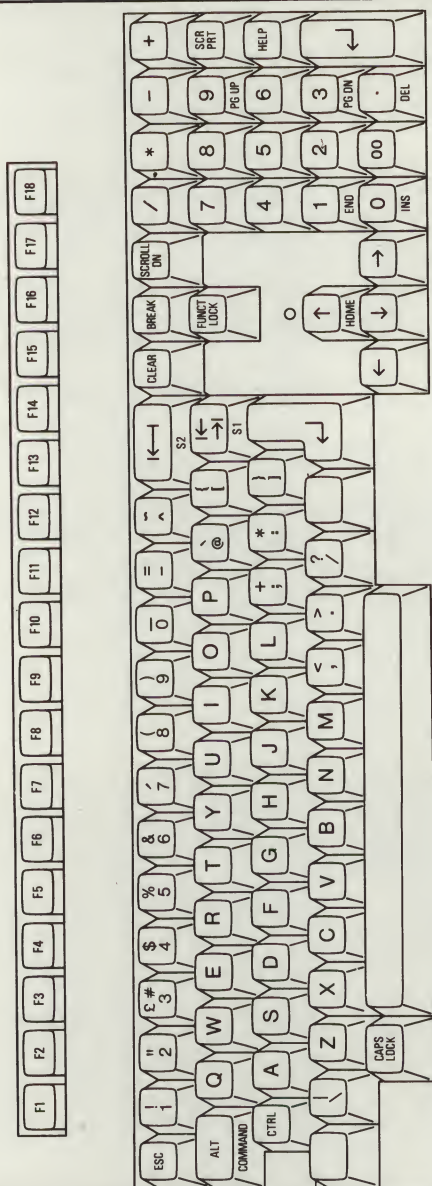


Fig. A-24 United Kingdom Olivetti Extended 102 Key Keyboard

Fig. A-25 USA Olivetti Extended 102 Key Keyboard



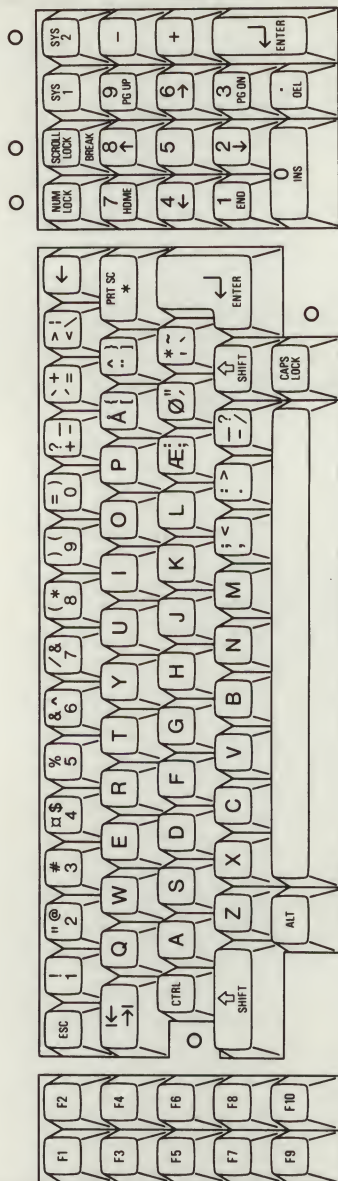


Fig. A-26 Denmark Olivetti Family 86 Key Keyboard

Fig. A-27 Finland Sweden Olivetti Family 86 Key Keyboard



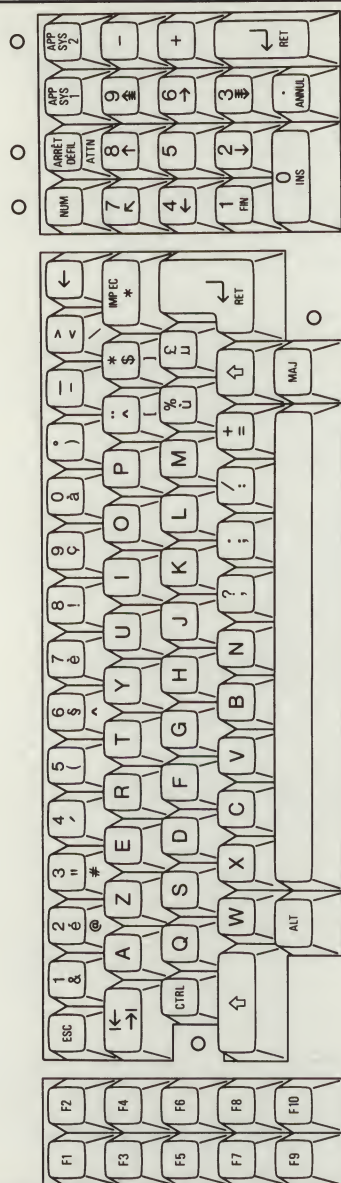


Fig. A-28 France Olivetti Family 86 Key Keyboard

Fig. A-29 German Olivetti Family 86 Key Keyboard



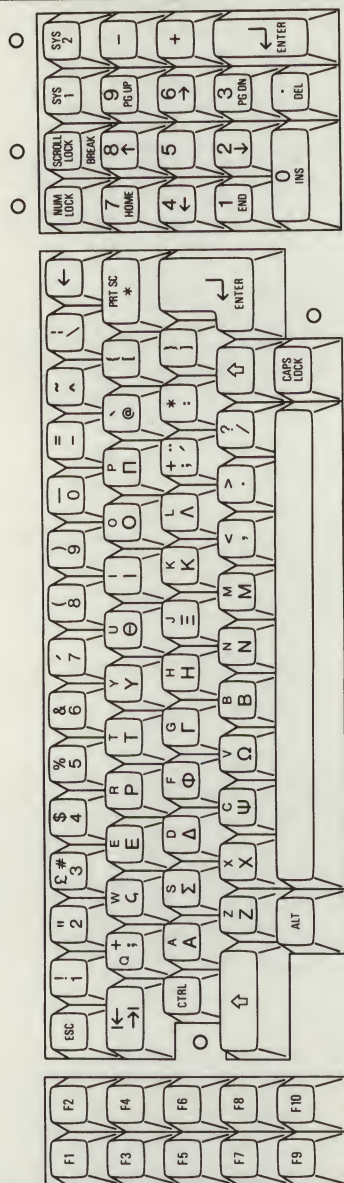


Fig. A-30 Greece Olivetti Family 86 Key Keyboard

Fig. A-31 Italy Olivetti Family 86 Key Keyboard



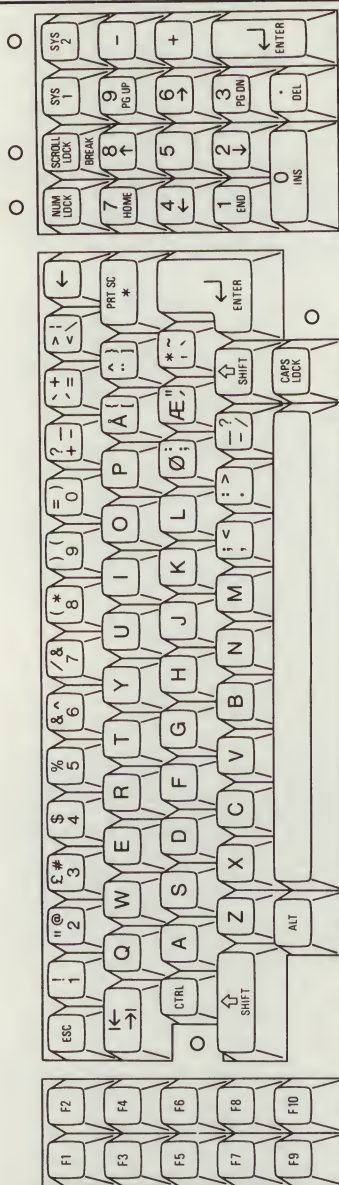


Fig. A-32 Norway Olivetti Family 86 Key Keyboard

KEYBOARD LAYOUTS

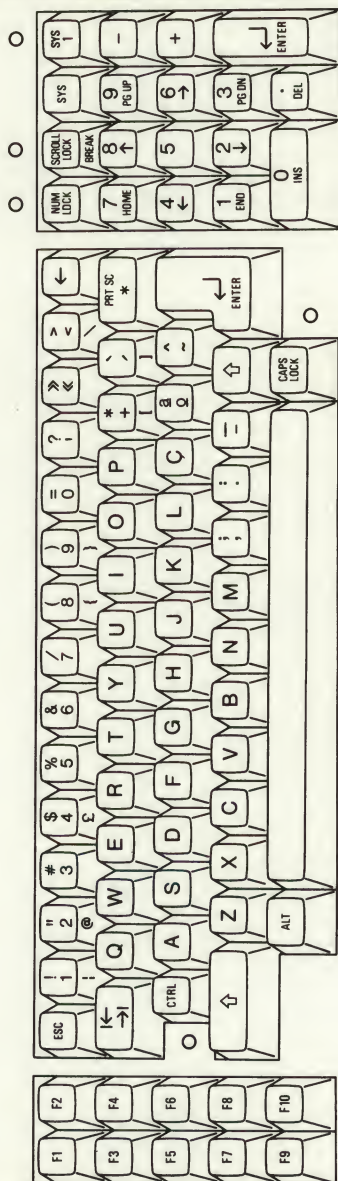


Fig. A-33 Portugal Olivetti Family 86 Key Keyboard

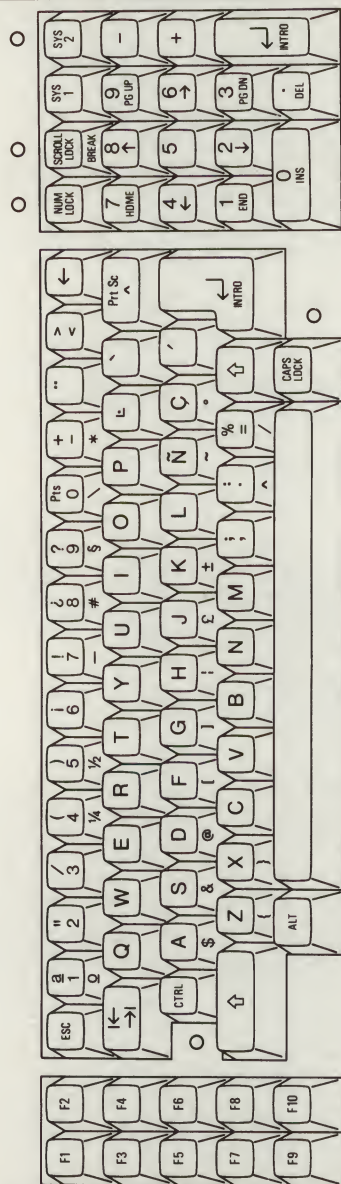


Fig. A-34 Spain Olivetti Family 86 Key Keyboard

KEYBOARD LAYOUTS

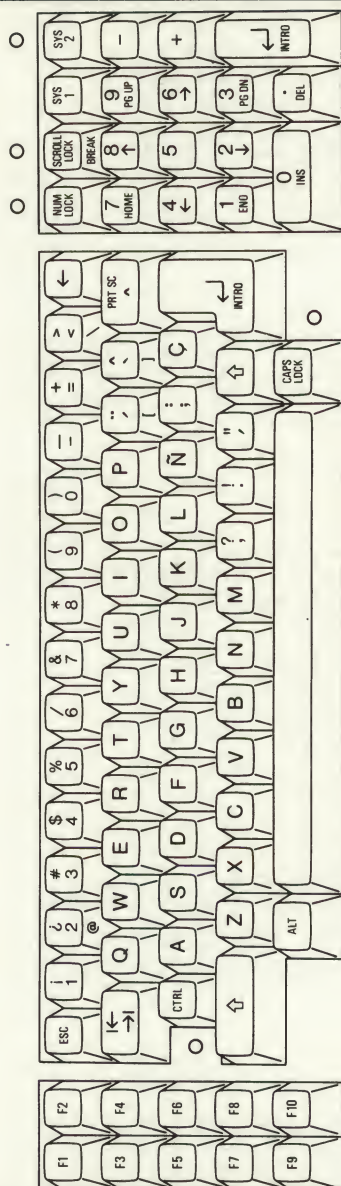


Fig. A-35 Spain International Olivetti Family 86 Key Keyboard

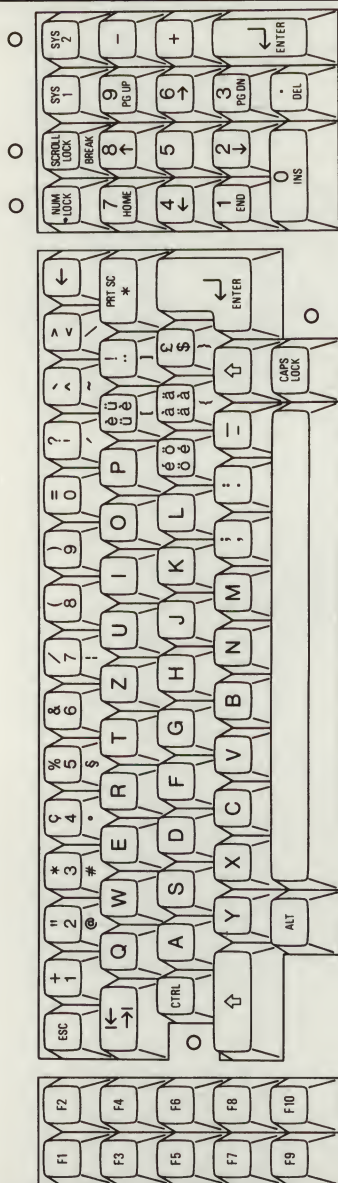


Fig. A-36 Swiss French Olivetti Family 86 Key Keyboard

KEYBOARD LAYOUTS

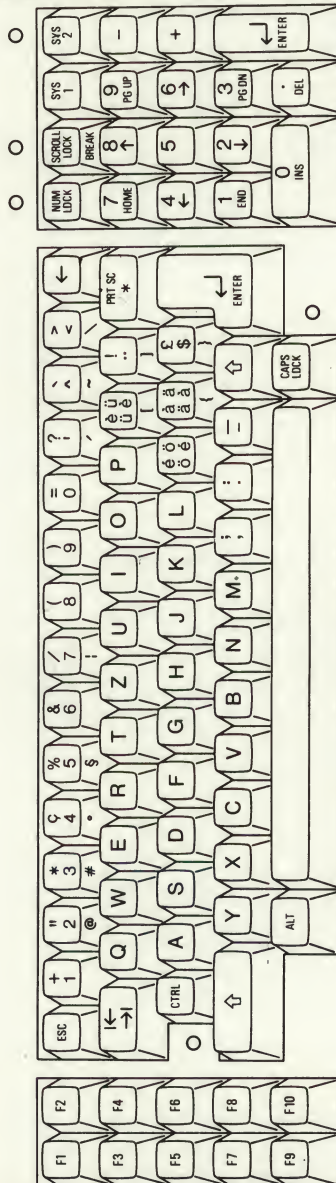


Fig. A-37 Swiss German Olivetti Family 86 Key Keyboard

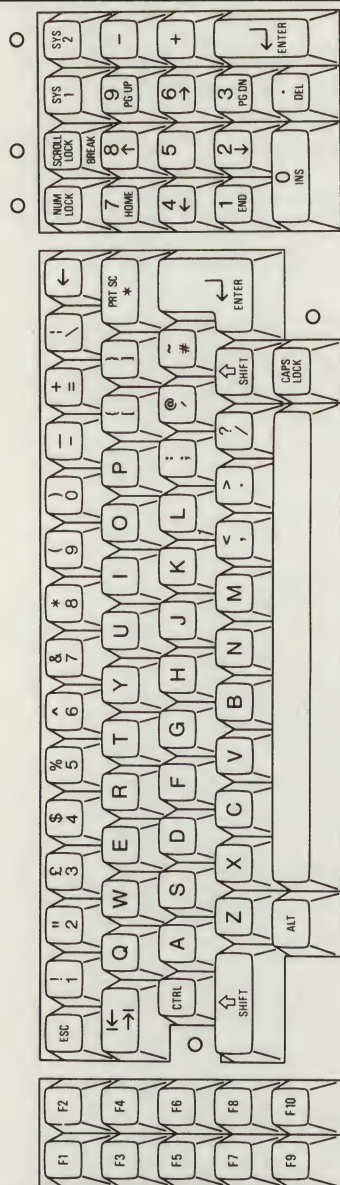


Fig. A-38 United Kingdom Olivetti Family 86 Key Keyboard

KEYBOARD LAYOUTS

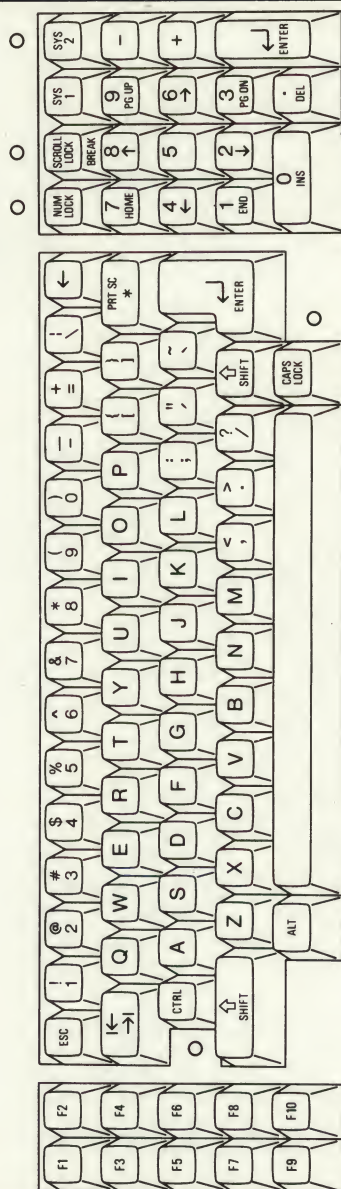


Fig. A-39 USA Olivetti Family 86 Key Keyboard

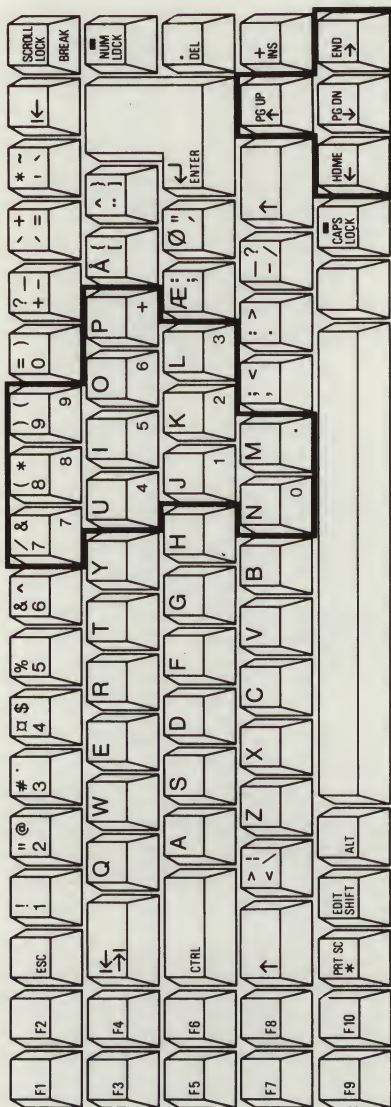


Fig. A-40 Denmark Olivetti M15 Keyboard

KEYBOARD LAYOUTS

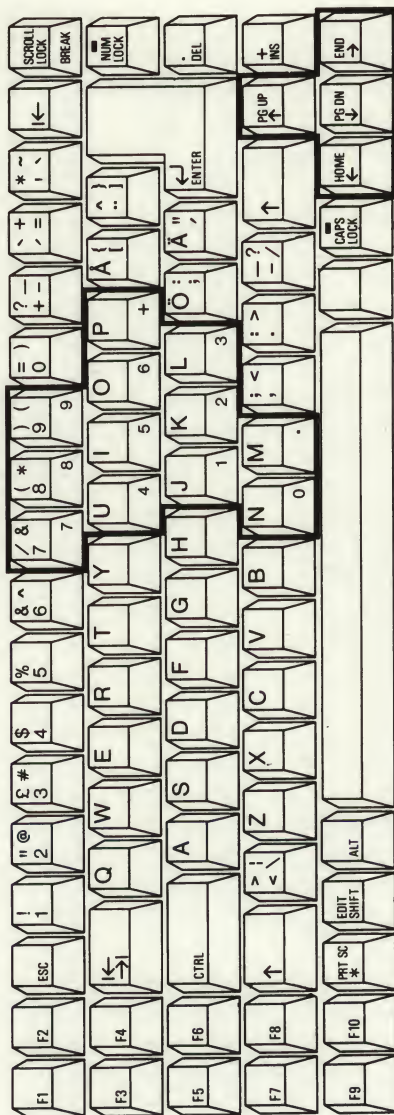


Fig. A-41 Finland Sweden Olivetti M15 Keyboard

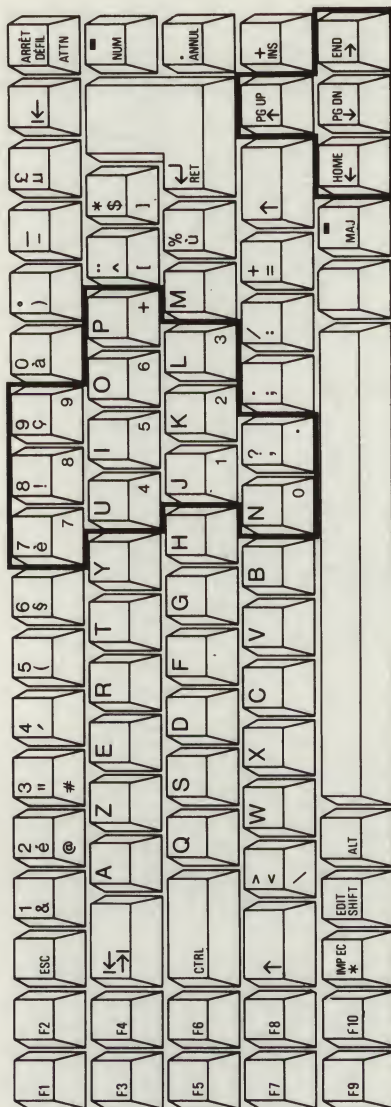


Fig. A-42 France Olivetti M15 Keyboard

KEYBOARD LAYOUTS

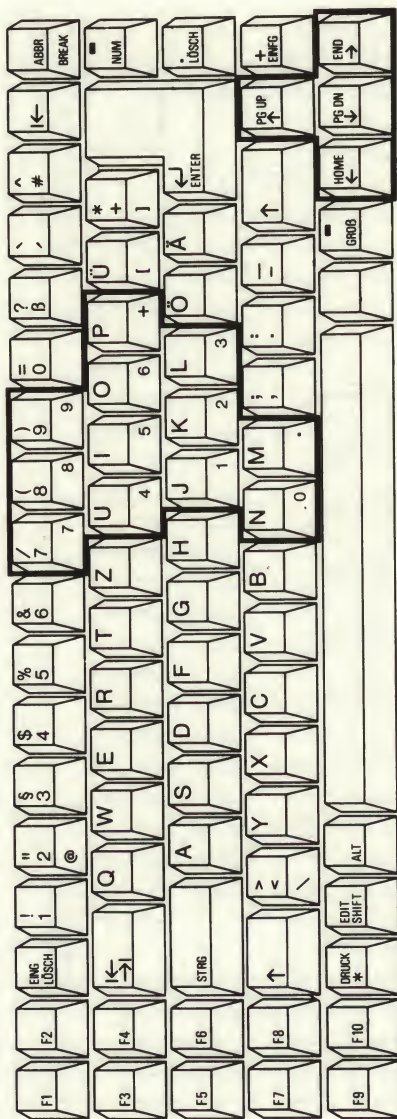


Fig. A-43 Germany Olivetti M15 Keyboard

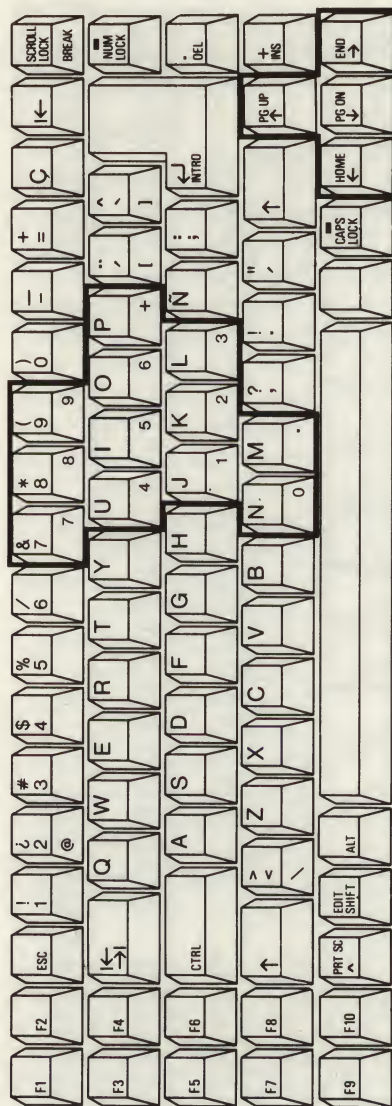
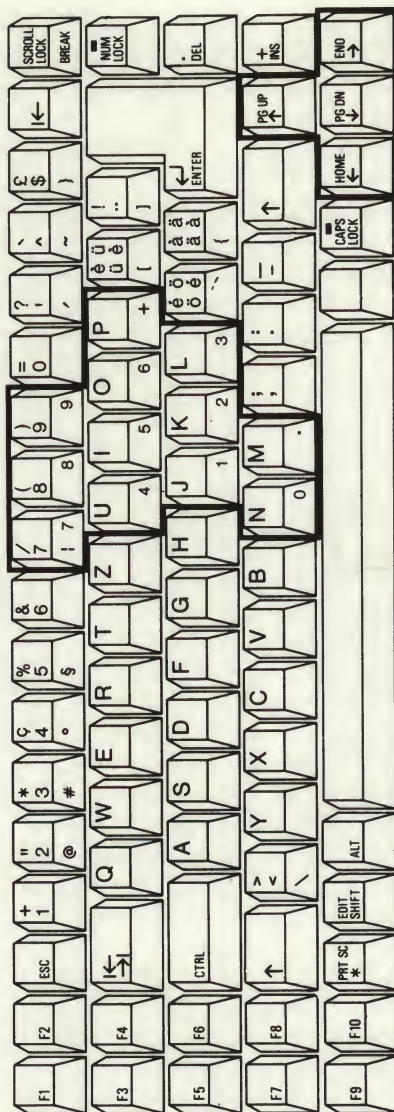


Fig. A-46 Spain International Olivetti M15 Keyboard

Fig. A-47 Swiss Olivetti M15 Keyboard



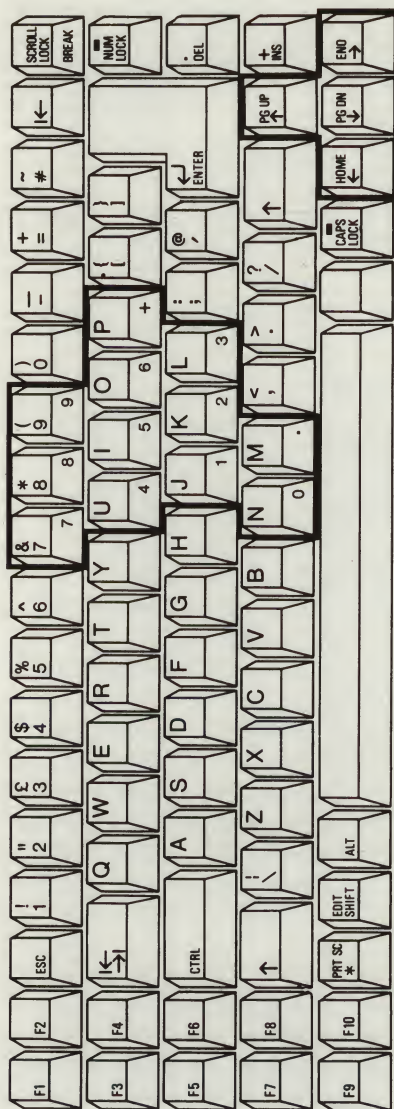


Fig. A-48 United Kingdom Olivetti M15 Keyboard

KEYBOARD LAYOUTS

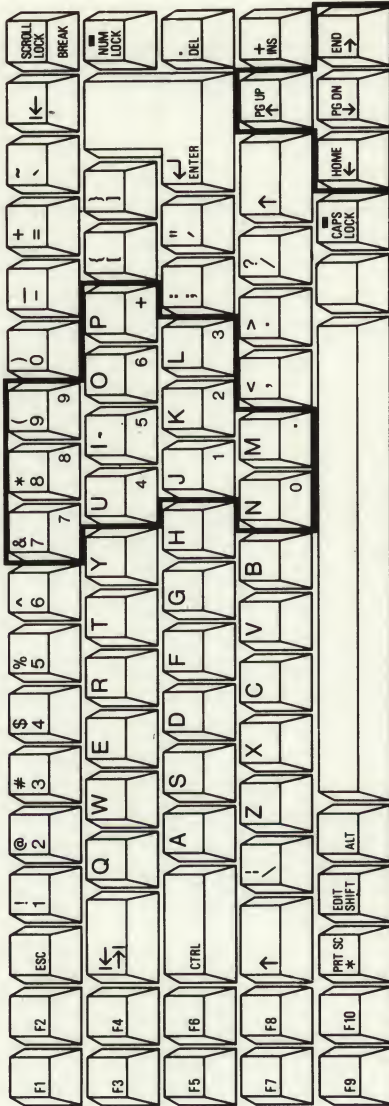
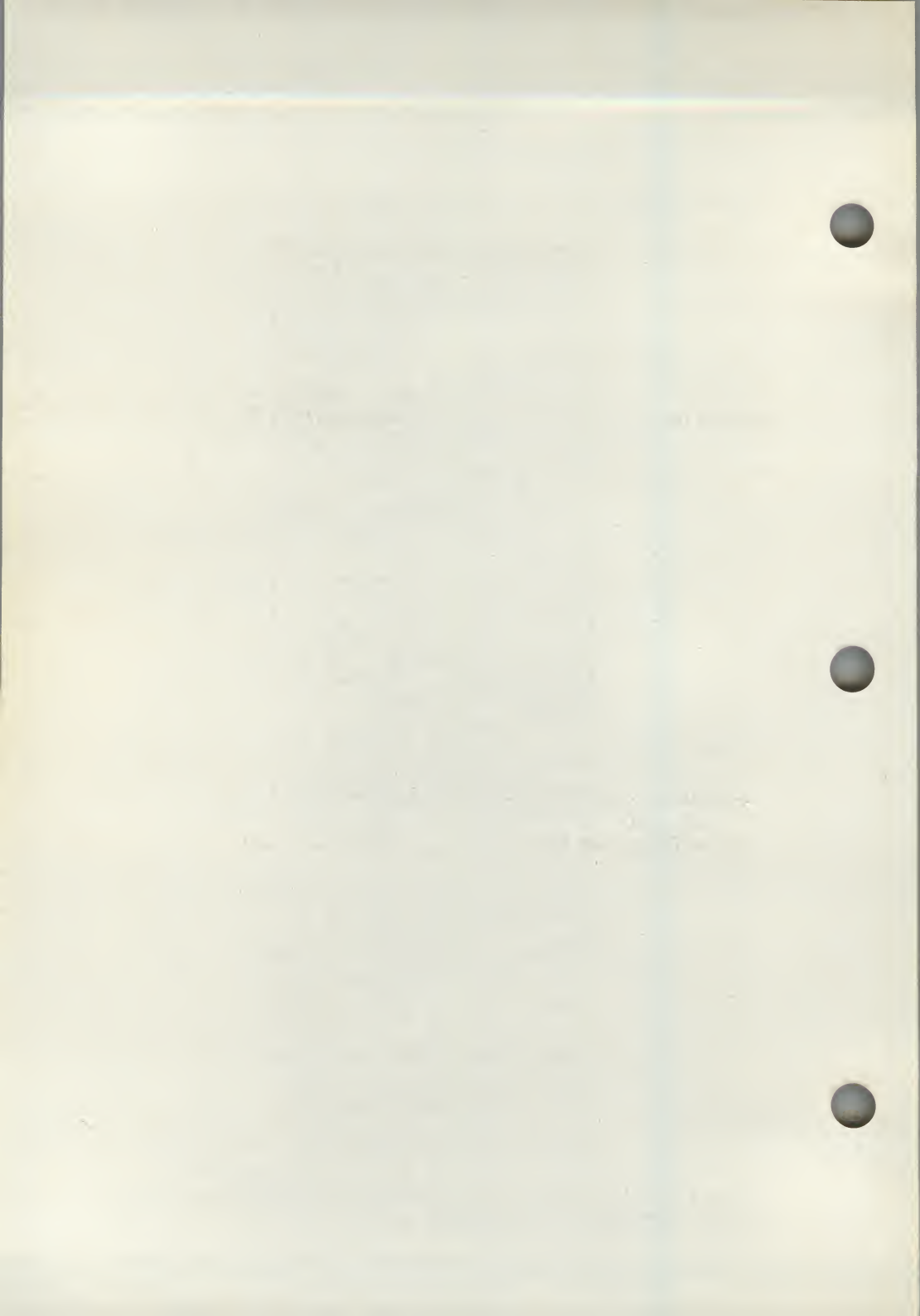


Fig. A-49 USA Olivetti M15 Keyboard



INDEX

A

AUTOEXEC.BAT, 2-15, 2-16,
6-3

B

BACKUP command, 5-3
boot, 2-6
booting up, 2-6
bootstrapping, 2-6
BUFFERS command
(CONFIG.SYS), 6-2

C

CLS command, 6-4
commands
 BACKUP, 5-3
 CLS, 6-4
 COPY, 4-4
 DIR, 2-13
 DISKCOPY, 2-9
 ECHO, 6-4
 FDISK, 5-5
 FORMAT, 2-11, 2-13, 4-3,
 5-39, 5-40
 GRAFTABL, 3-3, 6-4
 GREEK, 3-2
 KEYBxx, 3-2
 NORDIC, 3-2
 PATH, 6-4
 PORTUGAL, 3-2
 PROMPT, 6-4
 REPLACE, 4-2, 5-2
 RESTORE, 5-4
 SELECT, 2-19, 3-3, 4-5, 5-41
 SPAIN1, 3-2
 SYS, 4-1
CONFIG.SYS, 6-1
CONFIG.SYS commands,
 BUFFERS, 6-2
 COUNTRY, 2-17, 3-4
 DRIVPARM, 6-2

FILES, 6-2

configuring MS-DOS, 6-1
COPY command, 4-4
COUNTRY command
(CONFIG.SYS), 2-17, 3-4

D

dead symbols, 3-12
default drive, 2-8
DIR command, 2-13
disk
 fixed, 2-7, 2-19, 5-1
 hard, 2-7, 2-19, 5-1
DISKCOPY command, 2-9
diskette
 capacities, 2-2
 write protecting, 2-5
diskettes
 formatting, 2-11
 master, 2-9
working, 2-9
drive
 default, 2-8
 dual, 2-1
 external, 2-1, 2-4
 identification, 2-2
 single, 2-1, 2-9
drives
 3 1/2 inch diskette, 2-3
 5 1/4 inch diskette, 2-3, 2-13
 High-Capacity, 2-3, 2-13
 Normal-Capacity, 2-3, 2-13
DRIVPARM command
(CONFIG.SYS), 6-2

E

ECHO command, 6-4
enhanced disk
 WARNING, 5-32
external drive systems, 2-4, 6-2

F

FDISK command, 5-5, 5-18, 5-32
FILES command
 (CONFIG.SYS), 6-2
fixed disk, 2-7, 2-19, 5-1
fixed disk drive letters, 5-35
fixed disk setup program, 5-5
fonts, 3-1, 3-3
FORMAT command, 2-11, 2-13, 4-3, 5-39, 5-40
formatting
 diskettes, 2-11, 4-3

G

GRAFTABL command, 3-3, 6-4
GREEK command, 3-2
Greek keyboard, 3-11

H

hard disk, 2-7, 2-19, 5-1
hidden files, 2-14

I

invisible characters, 3-13

K

keyboard 2, 3-13
keyboards, 3-1
 dead symbols, 3-12
 Greek, 3-11
 invisible characters, 3-13
 multi-character keys, 3-9
 Portugal, 3-11
KEYBxx command, 3-2

M

Microbox, 2-4

Minibox, 2-4
multi-character keys, 3-9
multiple partitions, 5-18

N

national keyboard drivers, 2-15, 3-1
national screen fonts, 2-15, 3-3
National variations
 fonts, 3-3
 keyboards, 3-5
NORDIC command, 3-2

P

PATH command, 6-4
pop-up programs, 6-4
PORTUGAL command, 3-2
Portugal keyboard, 3-11
PROMPT command, 6-4

R

REPLACE command, 4-2, 5-2
reset, 2-6
resident programs, 6-4
RESTORE command, 5-4

S

SELECT command, 2-19, 3-3, 4-5, 5-41
 parameters, 3-4
single drive systems, 2-1, 2-9
SPAIN command, 3-2
SYS command, 4-1, 5-1

T

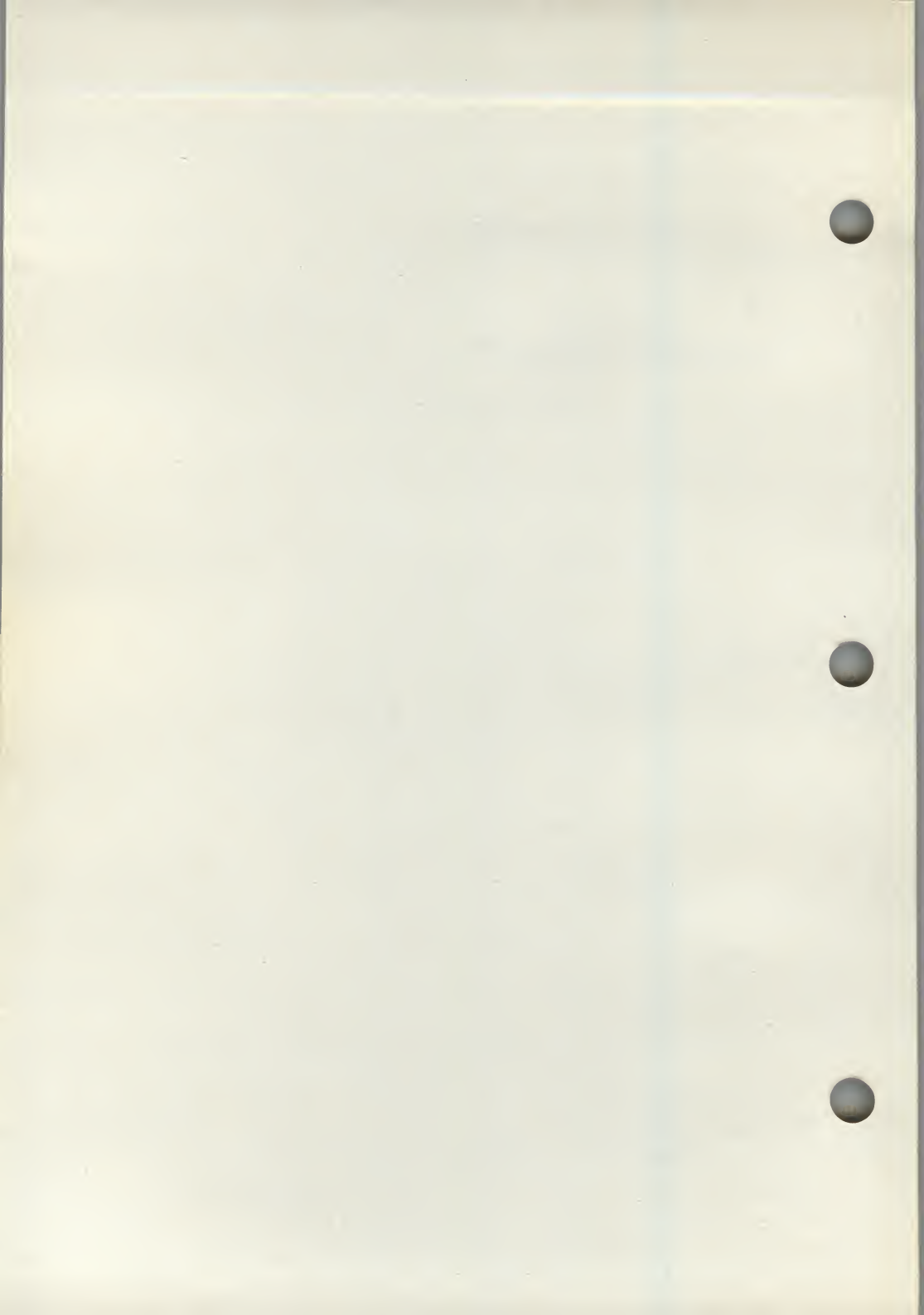
two floppy drive systems, 2-1, 2-10
two fixed disks, 5-32

V

volume label, 2-13, 5-38, 5-39,
5-41

W

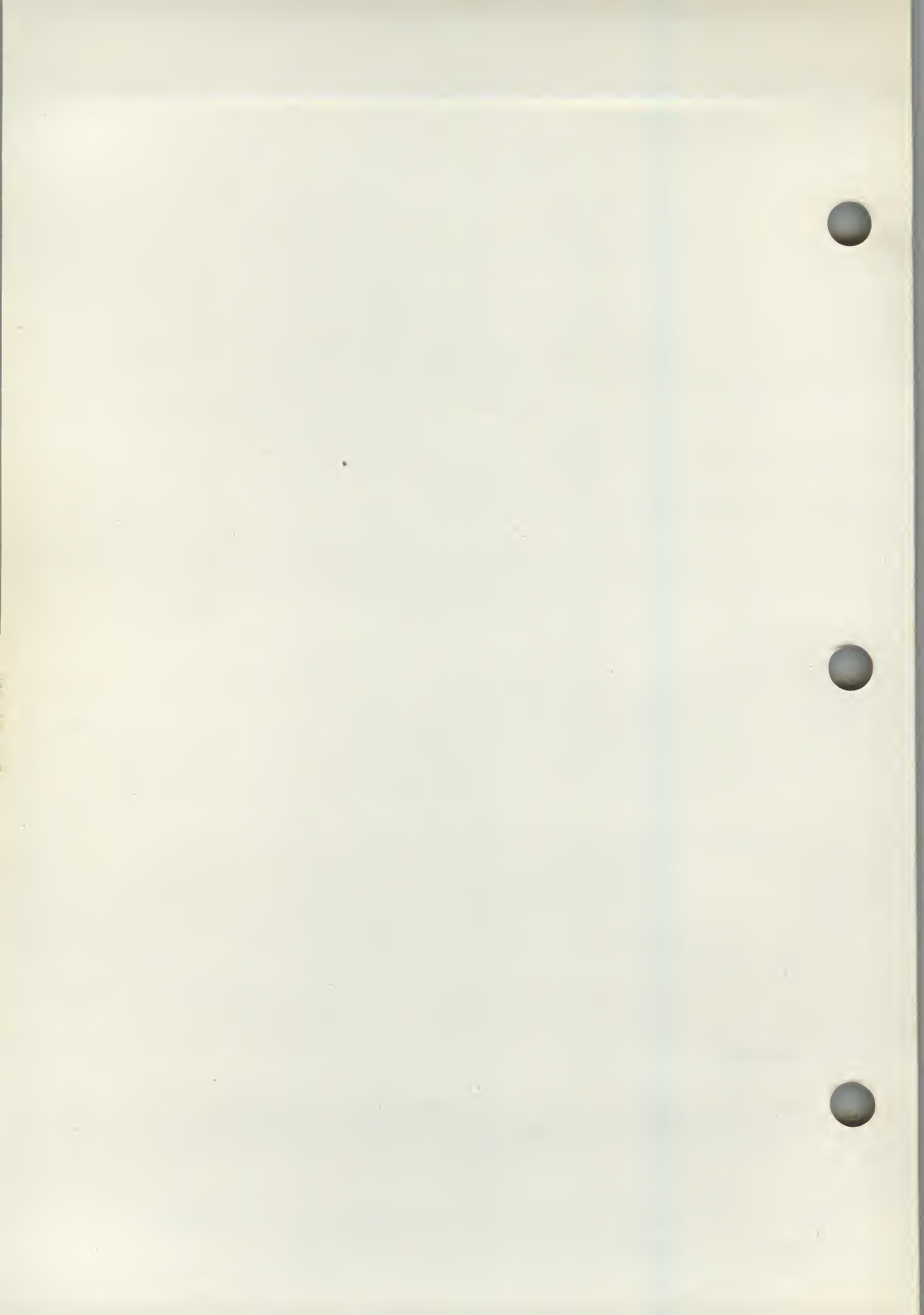
write protecting diskettes, 2-5

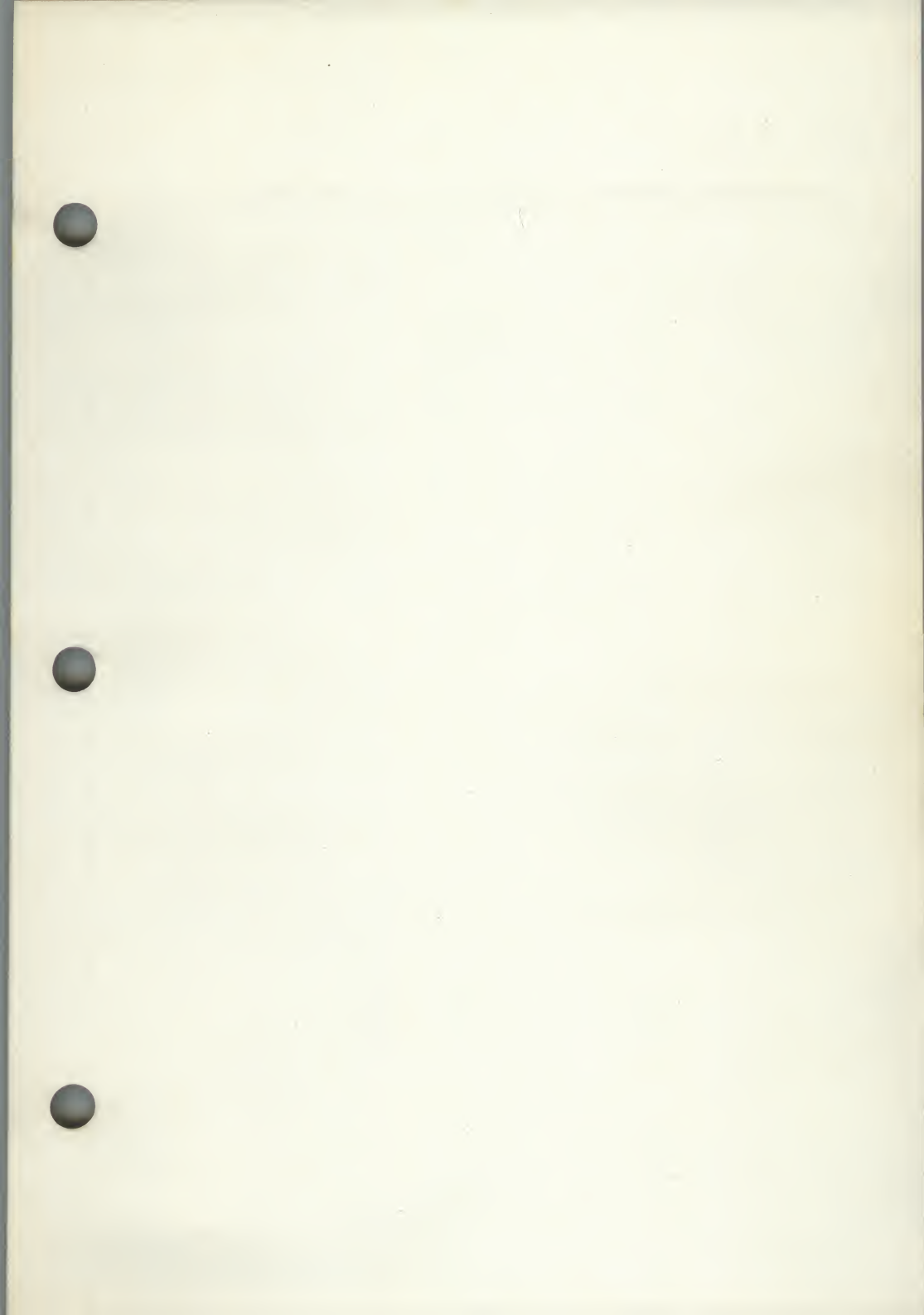


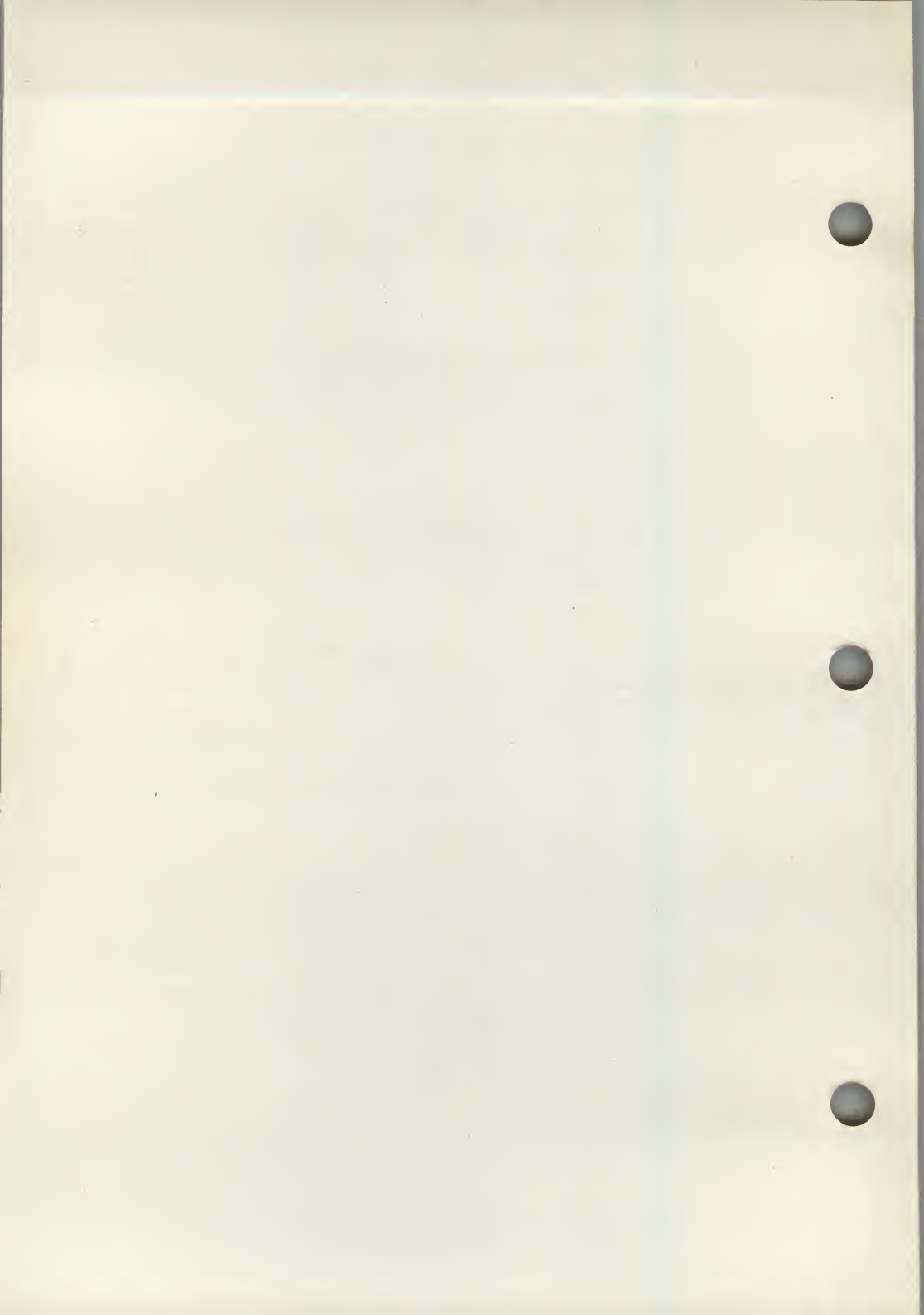
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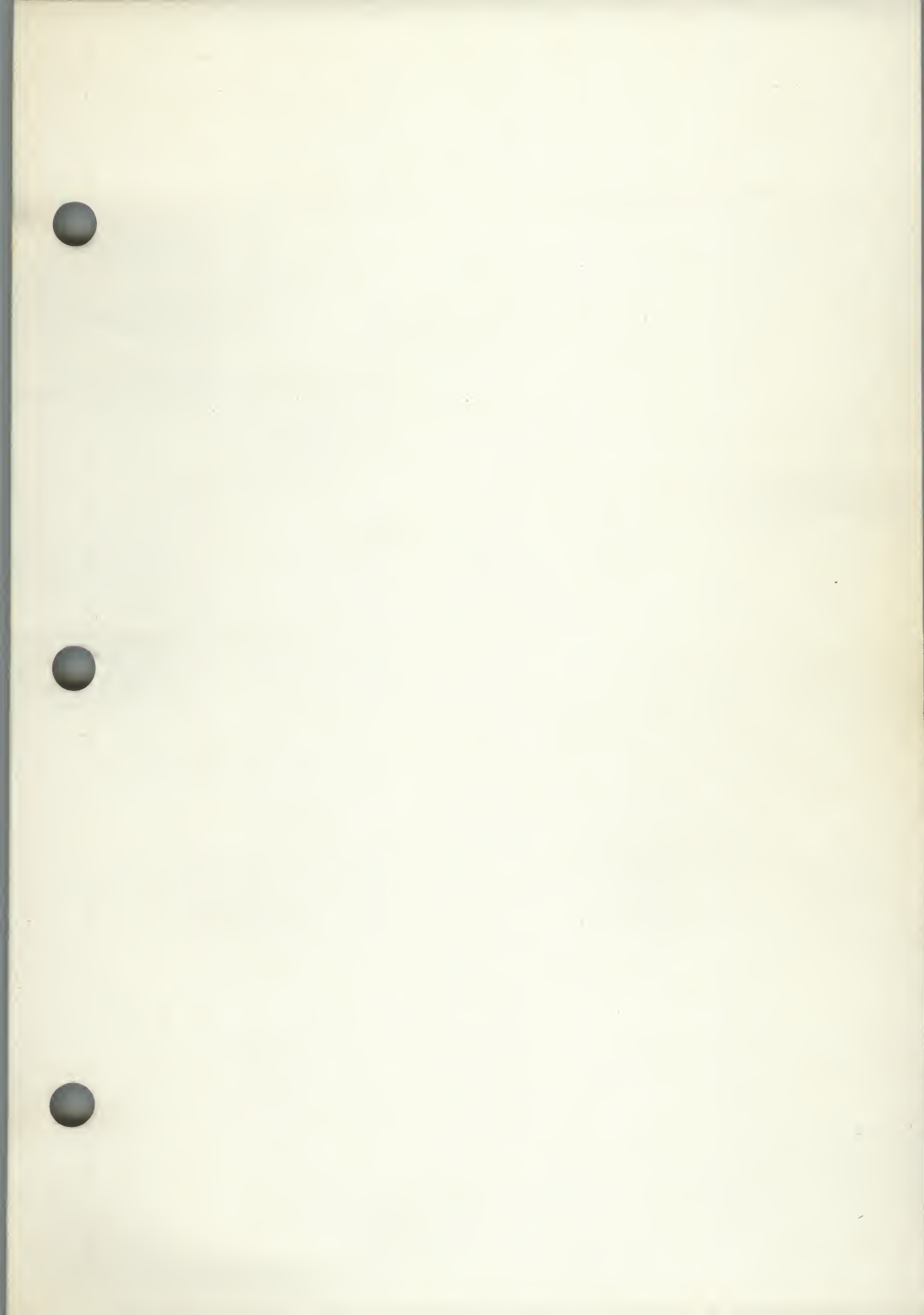
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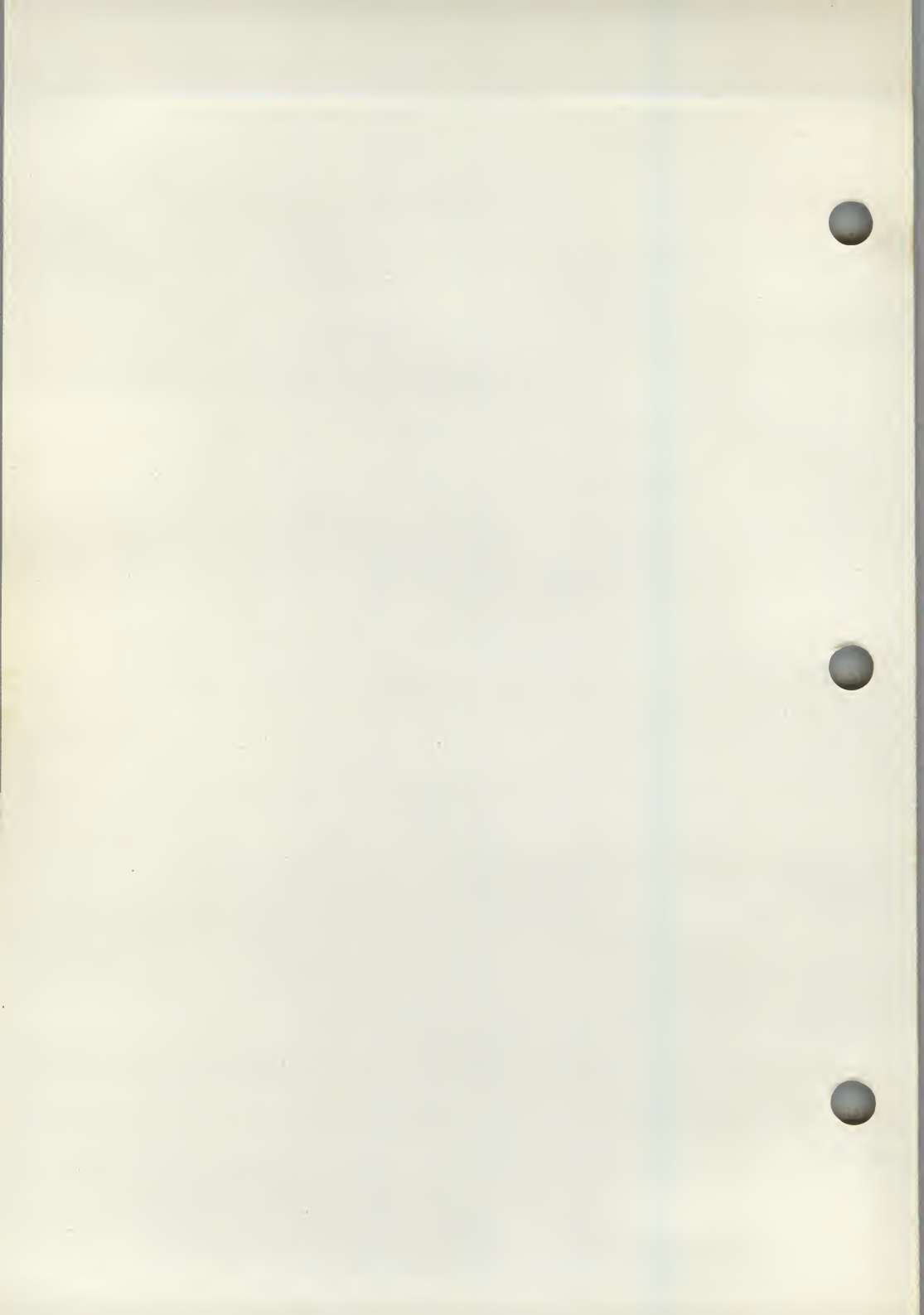
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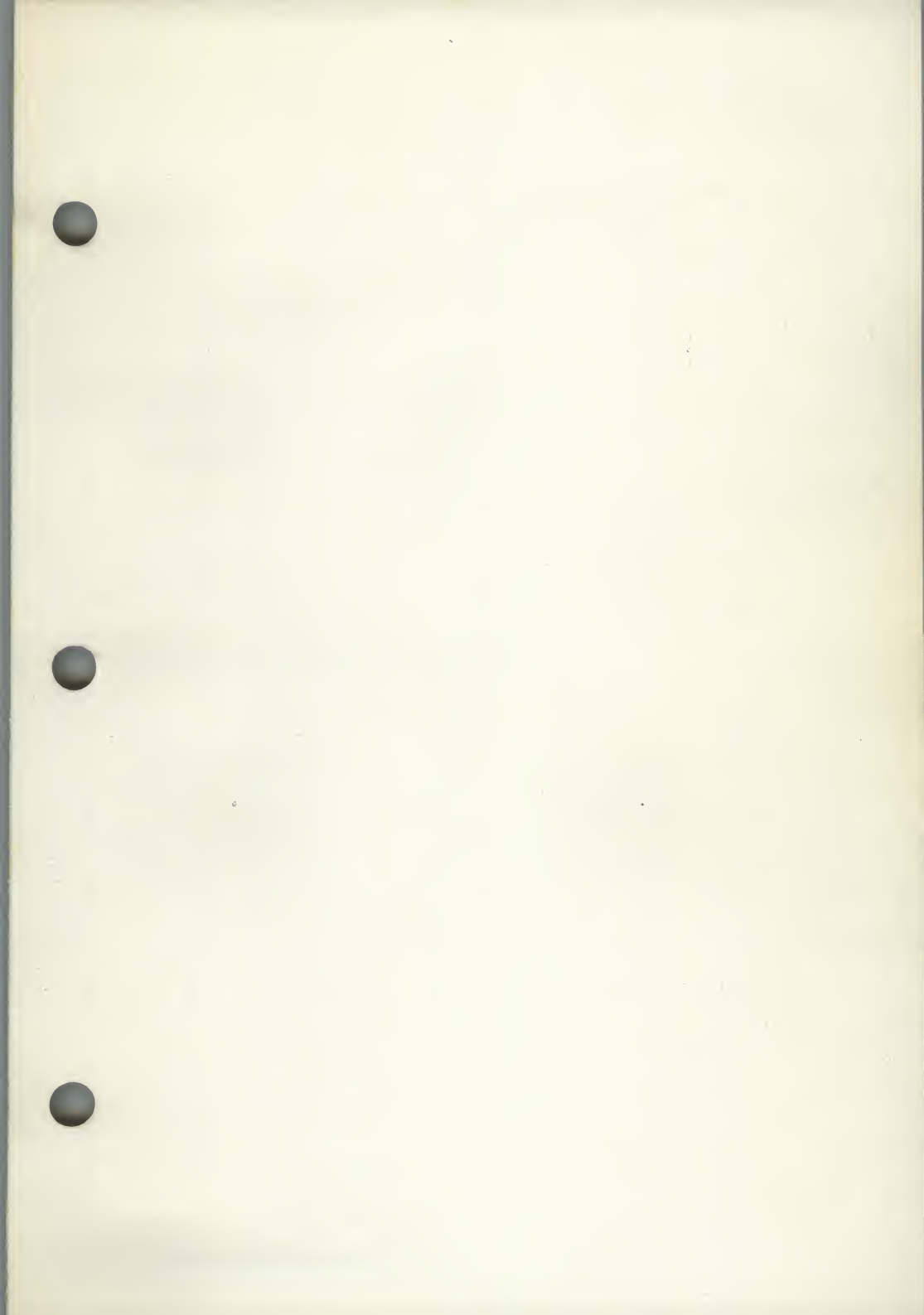


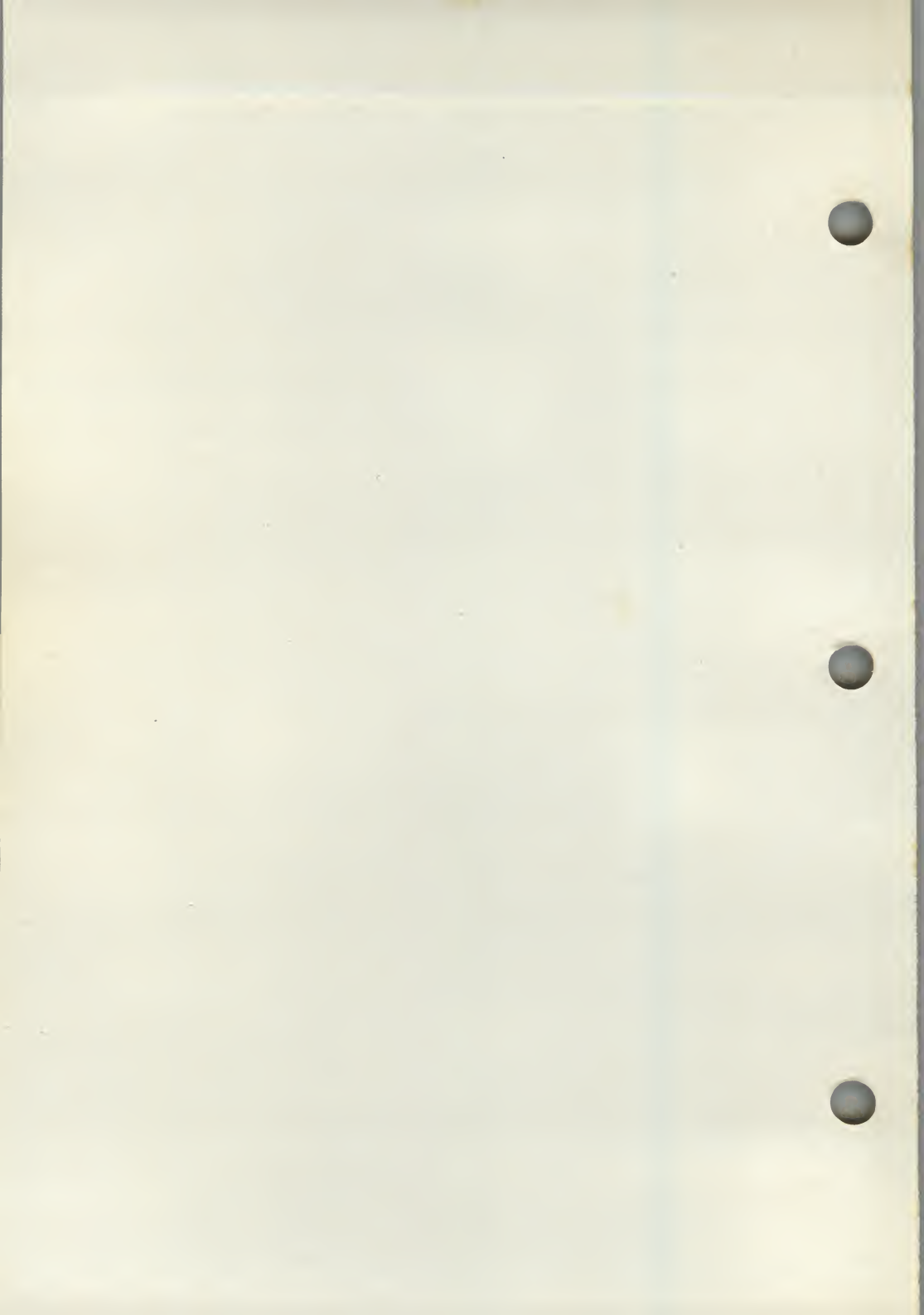


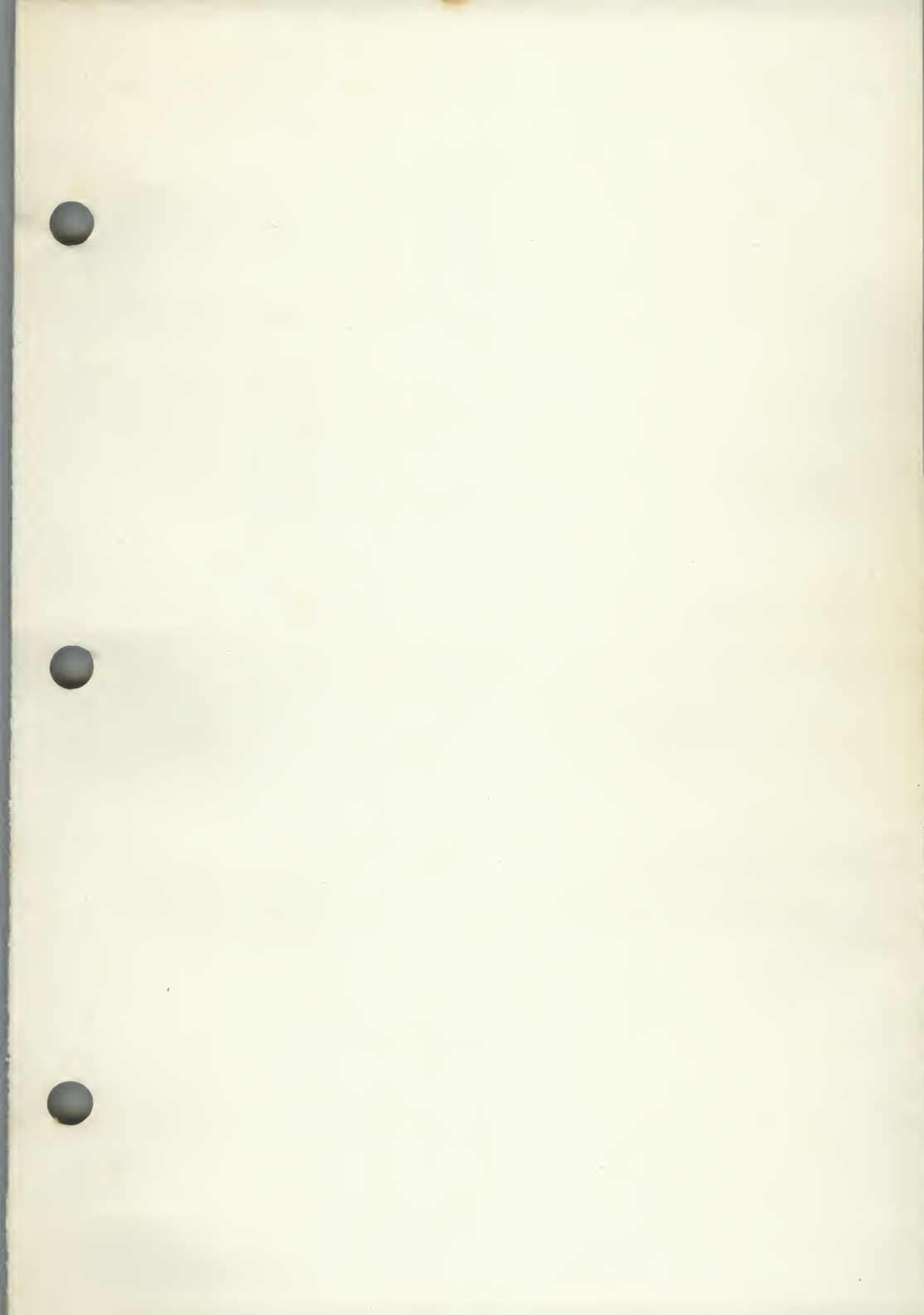


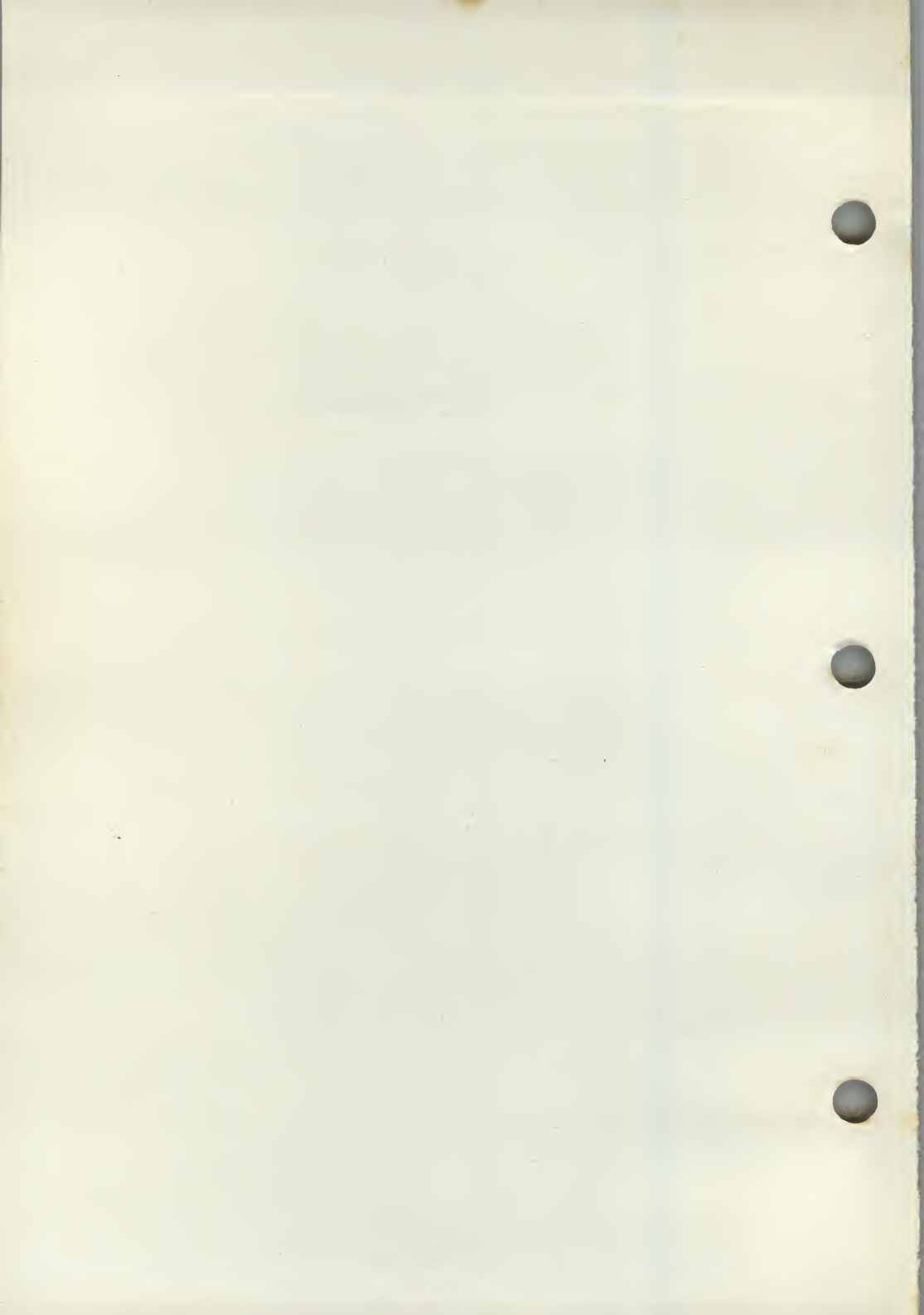


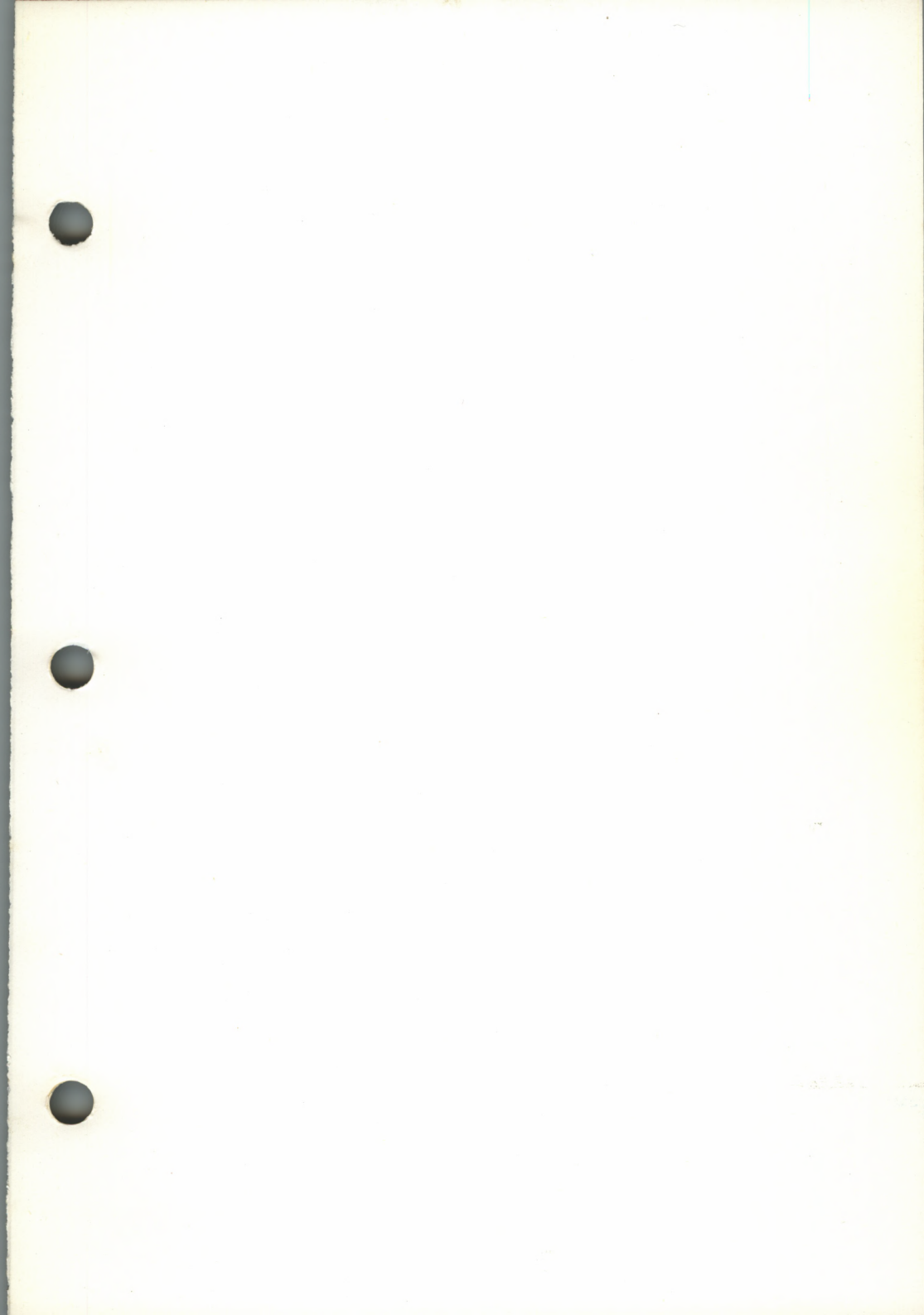












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